SPLIT TYPE
ROOM AIR CONDITIONER
Universal Floor / Ceiling
Duct / Cassette
Wall Mounted / Floor type
INVERTER MULTI

SERVICE INSTRUCTION

Models	Indoor unit		Outdoor unit
	AB*14LBAJ	AU*12LBAB	AO*18LMAK2
	AB*18LBAJ	AU*14LBAB	AO*24LMAM2
	AB*24LBAJ	AU*18LBAB	AO*30LMAW4
	AB*F14LAT	AU*F09LAL	
	AB*F18LAT	AU*F12LAL	
	AB*F24LAT	AU*F14LAL	
	AB*F14LBT	AU*F18LAL	
	AB*F18LBT		
	AB*F24LBT	AS*18LBAJ	
		AS*24LBAJ	
	AR* 9LUAB	AS* 7LMACW	
	AR*12LUAD	AS* 9LMACW	
	AR*14LUAD	AS*12LMACW	
	AR*18LUAD	AS*A07LACM	
	AR*22LUAD	AS*A09LACM	
	AR*F09LALU	AS*A12LACM	
	AR*F12LALU	AS*A14LACM	
	AR*F14LALU	AS*A18LACM	
	AR*F18LALU		
	AR*F22LALU	AG*F09LAC	
		AG*F12LAC	
		AG*F14LAC	

Refrigerant
R410A

FUJITSU GENERAL LIMITED

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1. DESCRIPTION OF EACH CONTROL OPERATION

2. TROUBLE SHOOTING

3. REPLACEMENT PARTS

Refrigerant
R410A

Universal Floor / Ceiling
Duct / Cassette
Wall Mounted / Floor type
INVERTER (MULTI)

1 . DESCRIPTION OF EACH CONTROL OPERATION

1. CAPACITY CONTROL

1-1 COOLING, HEATING, DRY CAPACITY CONTROL

Compressor frequency decides by capacity of an indoor unit, operation number of an indoor unit, set temperature, room temperature and outside temperature.

2. AUTO CHANGEOVER OPERATION

When the air conditioner is set to the AUTO mode by remote control, operation starts in the optimum mode from among the HEATING, COOLING and MONITORING modes. During operation, the optimum mode is automatically swiched in accordance with temperature changes. The temperature can be set between 18°C and 30°C in 1 degC steps.

① When operation starts, only the indoor fan is operated for 1 minute. (Air flow mode: S- Lo)
After 1 minute, depends on the room temperature and outdoor unit's operarion mode,
the operation mode is selected in accordance with the table below.

(Table 1-1 : Operation mode selection table)

Room temperature :TR	Operation mode
TR ≧ Ts +2 degC	Cooling
Ts +2 degC > TR > Ts-2 degC	Monitoring
Ts +2 degC ≧ TR	Heating

Ts : Setting temperature
TR: Room temperature

(Table 1-2 : Operation mode selection table for AS*18/ 24LBAJ)

Room temperature :TR	Operation mode
TR ≧ Ts +2.5 degC	Cooling
Ts +2.5 degC > TR > Ts-2.5 degC	Monitoring
Ts +2.5 degC ≧ TR	Heating

Ts : Setting temperature
TR: Room temperature

② When COOLING was selected at ①, the same operation as COOLING OPERATION is performed.

③ When HEATING was selected at ①, the same operation as HEATING OPERATION is performed.

④ When the compressor was stopped for 6 consecutive minutes by the temperature control function after the COOLING or HEATING operation mode was selected at ① above, operation is switched to MONITORING and the operation mode is selected again.

3. INDOOR FAN CONTROL

1. Fan speed

(Table 2 : Indoor Fan Speed)

▪ AB*14LBAJ

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	850
	Me	760
	Lo	670
	S-Lo	250

▪ AB*18LBAJ

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1030
	Me	890
	Lo	770
	S-Lo	250

▪ AB*24LBAJ

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1180
	Me	1040
	Lo	900
	S-Lo	300

▪ AB*F14LAT, AB*F14LBT

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	850
	Me	800
	Lo	740
	Quiet	670
	S-Lo	300

▪ AB*F18LAT, AB*F18LBT

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1040
	Me	950
	Lo	800
	Quiet	740
	S-Lo	300

▪ AB*F24LAT, AB*F24LBT

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1230
	Me	1040
	Lo	900
	Quiet	780
	S-Lo	300

▪ AR*9LUAB

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	955
	Me	870
	Lo	800
	S-Lo	650

▪ AR*12LUAD

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	750
	Me	680
	Lo	610
	S-Lo	550

▪ AR*14LUAD

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1000
	Me	860
	Lo	720
	S-Lo	570

▪ AR*18LUAD

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1040
	Me	890
	Lo	750
	S-Lo	595

▪ AR*22LUAD

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1270
	Me	1050
	Lo	800
	S-Lo	595

▪ AR*F09LALU

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1010
	Me	950
	Lo	880
	Quiet	830
	S-Lo	450

▪ AR*F12LALU

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	790
	Me	720
	Lo	620
	Quiet	570
	S-Lo	330

▪ AR*F14LALU

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	990
	Me	880
	Lo	770
	Quiet	620
	S-Lo	330

▪ AR*F18LALU

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1040
	Me	950
	Lo	840
	Quiet	700
	S-Lo	450

▪ AR*F22LALU

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1320
	Me	1100
	Lo	980
	Quiet	780
	S-Lo	450

▪ AU*12/ 14LBAB

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	730
	Me	670
	Lo	590
	S-Lo	---

▪ AU*18LBAB

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	800
	Me	700
	Lo	600
	S-Lo	---

▪ AU*F09LAL

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	590
	Me	540
	Lo	490
	Quiet	440
Heating	Hi	590
	Me+	570
	Me	540
	Lo	490
	Quiet	440
Dry	Auto	460
Monitoring	S- Lo	300

▪ AU*F12LAL

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	660
	Me	580
	Lo	520
	Quiet	460
Heating	Hi	650
	Me+	620
	Me	580
	Lo	520
	Quiet	460
Dry	Auto	460
Monitoring	S- Lo	300

▪ AU*F14LAL

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	730
	Me	630
	Lo	540
	Quiet	460
Heating	Hi	740
	Me+	700
	Me	670
	Lo	600
	Quiet	480
Dry	Auto	460
Monitoring	S- Lo	300

▪ AU*F18LAL

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	790
	Me	660
	Lo	570
	Quiet	460
Heating	Hi	840
	Me+	800
	Me	750
	Lo	650
	Quiet	500
Dry	Auto	460
Monitoring	S- Lo	300

▪ AS*18LBAJ

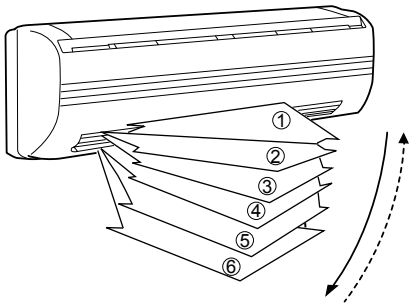
Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1160
	Me	1000
	Lo	830
	Quiet	780
	S-Lo	550

▪ AS*24LBAJ

Operation mode	Air flow mode	Speed (rpm)
Cooling Heating	Hi	1290
	Me	1100
	Lo	870
	Quiet	730
	S-Lo	550

▪ AS*7LMACW

Operation mode	Air flow mode	Speed (rpm)	
		Louver position ②	Louver position ①③④⑤⑥
Cooling Fan	Hi	1100	
	Me	1050	
	Lo	1000	
	Quiet	950	
Heating	Hi	1120	1100
	Me	1070	1030
	Lo	1000	970
	Quiet	950	930
	S- Lo	500	500



▪ AS*9LMACW

Operation mode	Air flow mode	Speed (rpm)	
		Louver position ②	Louver position ①③④⑤⑥
Cooling Fan	Hi	1200	
	Me	1100	
	Lo	1000	
	Quiet	940	
Heating	Hi	1200	1150
	Me	1100	1050
	Lo	1000	960
	Quiet	940	900
	S- Lo	500	500

▪ AS*12LMACW

Operation mode	Air flow mode	Speed (rpm)	
		Louver position ②	Louver position ①③④⑤⑥
Cooling Fan	Hi	1310	
	Me	1260	
	Lo	1190	
	Quiet	1100	
Heating	Hi	1310	1200
	Me	1180	1100
	Lo	1030	1000
	Quiet	970	970
	S- Lo	500	500

▪ AS*A07LACM

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	1140
	Me	1000
	Lo	880
	Quiet	700
Heating	Hi/ Me+	1140
	Me	1050
	Lo	980
	Quiet	800
Dry	Auto	700
Monitoring	S- Lo	480

▪ AS*A09LACM

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	1220
	Me	1060
	Lo	900
	Quiet	720
Heating	Hi/ Me+	1220
	Me	1110
	Lo	1040
	Quiet	830
Dry	Auto	720
Monitoring	S- Lo	480

▪ AS*A12LACM

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	1280
	Me	1100
	Lo	900
	Quiet	750
Heating	Hi/ Me+	1320
	Me	1180
	Lo	1080
	Quiet	860
Dry	Auto	750
Monitoring	S- Lo	480

▪ AS*A14LACM

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	1480
	Me	1250
	Lo	1050
	Quiet	850
Heating	Hi/ Me+	1480
	Me	1250
	Lo	1100
	Quiet	950
Dry	Auto	850
Monitoring	S- Lo	480

▪ AS*A18LACM

Operation mode	Air flow mode	Speed (rpm)
Cooling Fan	Hi	1480
	Me	1250
	Lo	1100
	Quiet	950
Heating	Hi/ Me+	1480
	Me	1250
	Lo	1100
	Quiet	950
Dry	Auto	950
Monitoring	S- Lo	480

▪ AG*F09LAC

Operation mode	Air flow mode		Speed (rpm)	
			Upper& Lower air flow mode	Upper air flow mode
Cooling Fan	Hi	(Upper/ Lower)	1120/ 950	1230/ ---
	Me	(Upper/ Lower)	960/ 820	1070/ ---
	Lo	(Upper/ Lower)	820/ 700	910/ ---
	Quiet	(Upper/ Lower)	660/ 560	750/ ---
	S-Lo	(Upper/ Lower)	570/ 480	--- / ---
Heating	Hi	(Upper/ Lower)	1120/ 950	1230/ ---
	Me	(Upper/ Lower)	1000/ 850	1090/ ---
	Lo	(Upper/ Lower)	860/ 730	940/ ---
	Quiet	(Upper/ Lower)	660/ 560	750/ ---
	Cool air prevention	(Upper/ Lower)	660/ 560	680/ ---
	S-Lo	(Upper/ Lower)	660/ 560	680/ ---

▪ AG*F12LAC

Operation mode	Air flow mode		Speed (rpm)	
			Upper& Lower air flow mode	Upper air flow mode
Cooling Fan	Hi	(Upper/ Lower)	1240/ 1050	1300/ ---
	Me	(Upper/ Lower)	1050/ 890	1120/ ---
	Lo	(Upper/ Lower)	860/ 730	930/ ---
	Quiet	(Upper/ Lower)	660/ 560	750/ ---
	S-Lo	(Upper/ Lower)	570/ 480	--- / ---
Heating	Hi	(Upper/ Lower)	1240/ 1050	1300/ ---
	Me	(Upper/ Lower)	1080/ 920	1140/ ---
	Lo	(Upper/ Lower)	910/ 770	980/ ---
	Quiet	(Upper/ Lower)	660/ 560	750/ ---
	Cool air prevention	(Upper/ Lower)	660/ 560	680/ ---
	S-Lo	(Upper/ Lower)	660/ 560	680/ ---

▪ AG*F14LAC

Operation mode	Air flow mode		Speed (rpm)	
			Upper& Lower air flow mode	Upper air flow mode
Cooling Fan	Hi	(Upper/ Lower)	1330/ 1120	1370/ ---
	Me	(Upper/ Lower)	1100/ 930	1160/ ---
	Lo	(Upper/ Lower)	890/ 750	960/ ---
	Quiet	(Upper/ Lower)	660/ 560	750/ ---
	S-Lo	(Upper/ Lower)	570/ 480	--- / ---
Heating	Hi	(Upper/ Lower)	1330/ 1120	1370/ ---
	Me	(Upper/ Lower)	1140/ 970	1180/ ---
	Lo	(Upper/ Lower)	940/ 800	1020/ ---
	Quiet	(Upper/ Lower)	660/ 560	750/ ---
	Cool air prevention	(Upper/ Lower)	660/ 560	680/ ---
	S-Lo	(Upper/ Lower)	660/ 560	680/ ---

2. FAN OPERATION

2-1. For AB*14L/ 18L/ 24L

AR* 9L/ 12L/ 14L/ 18L/ 22L

AU*12L/ 14L/ 18L

The airflow can be switched in 4 steps such as AUTO, LOW, MED, HIGH, while the indoor fan only runs.

2-2. For AB*F14L/ 18L/ 24L

AR*F09L/ 12L/ 14L/ 18L/ 22L

AU*F09L/ 12L/ 14L/ 18L

AS*7L/ 9L/ 12L/ 18L/ 24L

AS*A07L/ 09L/ 12L/ 14L/ 18L

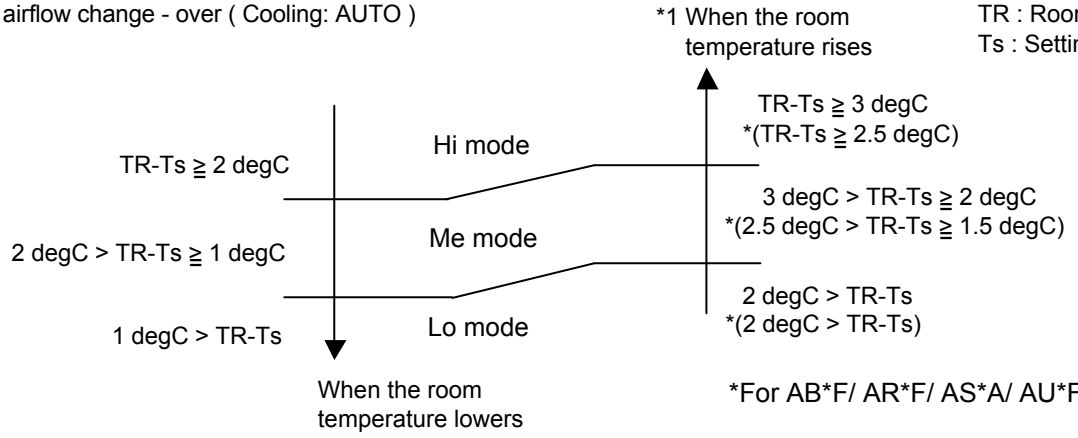
AG*F09L/ 12L/ 14L

The airflow can be switched in 5 steps such as AUTO, QUIET, LOW, MED, HIGH, while the indoor fan only runs.

3. COOLING OPERATION

Switch the airflow [AUTO], and the indoor fan motor will run according to a room temperature, as shown in Figure 1.
On the other hand, if switched in [HIGH]～[QUIET], the indoor motor will run at a constant airflow of [COOL] operation modes QUIET, LOW, MED, HIGH,as shown in Table 2.

(Fig.1)
airflow change - over (Cooling: AUTO)



*For AB*F/ AR*F/ AS*A/ AU*F/ AG*F Type

*1 : Contains a condition to the following
① When the operation mode is set to AUTO mode at the start of operation.
② When the setting temperature was changed.
③ When the operation mode was changed to COOLING mode.
④ When the airflow mode was changed to AUTO mode.

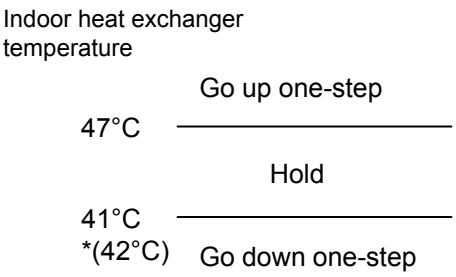
4. HEATING OPERATION

4-1. For AB/ AR/ AU/ AS Type

When the airflow is set to [AUTO], the indoor fan motor operates [MED] mode.
Then the indoor fan motor will run according to a room temperature, as shown in Figure 2.

On the other hand, if switched in [HIGH] ～ [QUIET], the indoor motor will run at a constant airflow of [HEAT] operation modes QUIET, LOW, MED, HIGH, as shown in Table 2.

(Fig.2 : Airflow change - over (Heating : AUTO))

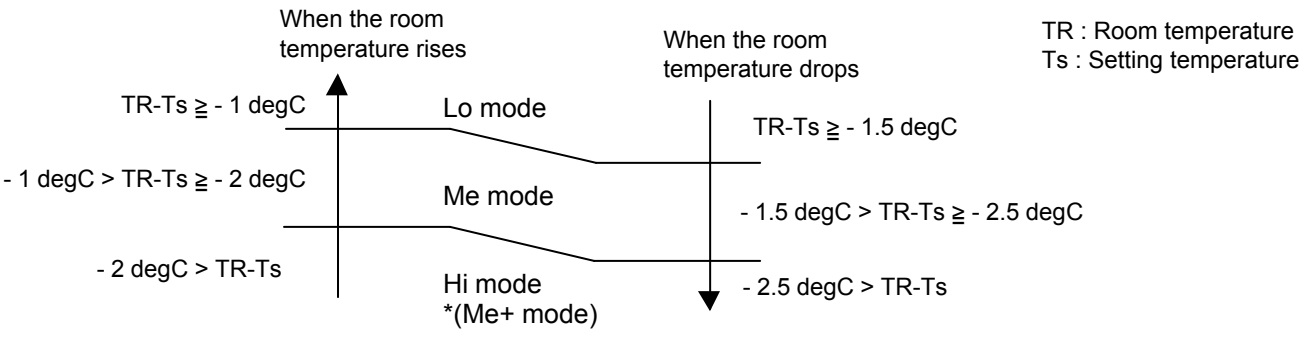


*For AS*7/ 9/ 12LMACW

4-2. For AB*F/ AR*F/ AU*F/ AS*A/ AG*F Type

Switch the airflow [AUTO], and the indoor fan motor will run according to a room temperature, as shown in Figure 3.
On the other hand, if switched in [HIGH] ～ [QUIET], the indoor motor will run at a constant airflow of [HEAT] operation modes QUIET, LOW, MED, HIGH, as shown in Table 2.

(Fig.3 : Airflow change - over (Heating : AUTO))



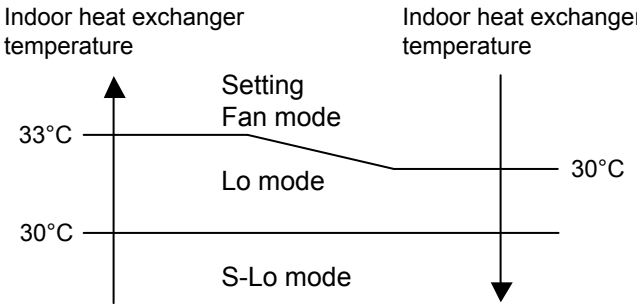
*For AS*A07/ 09/ 12/ 14/ 18LACM

5. COOL AIR PREVENTION CONTROL (Heating mode)

5-1. For AB/ AR/ AU Type

The maximum value of the indoor fan speed is set as shown in Figure 4, based on the detected temperature by the indoor heat exchanger sensor on heating mode.

(Fig.4 : Cool Air Prevention Control)

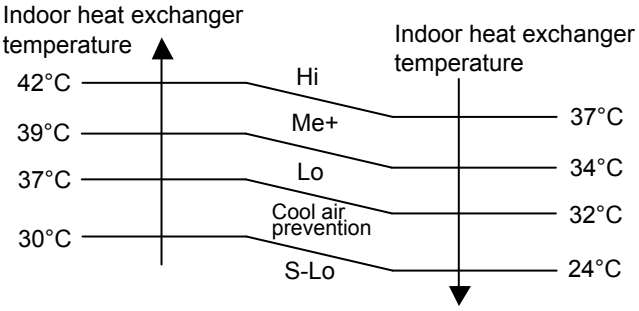


5-2. For AB*F/ AU*F Type

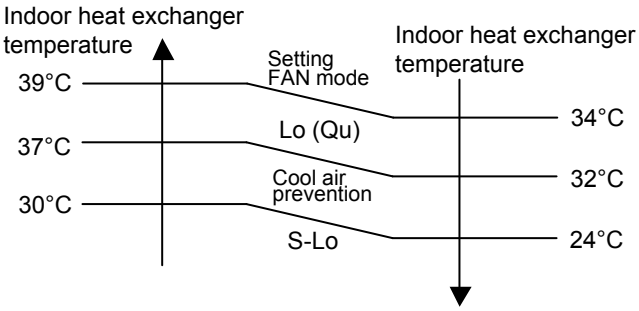
When the compressor operates, the maximum value of the indoor fan speed is set as shown in Figure 5, based on the detected temperature by the indoor heat exchanger sensor on heating mode.
When the compressor does not operate, the indoor fan motor operates [S-Lo] mode.

(Fig.5 : Cool Air Prevention Control)

< [Hi] setting >



< The other of [Hi] setting >

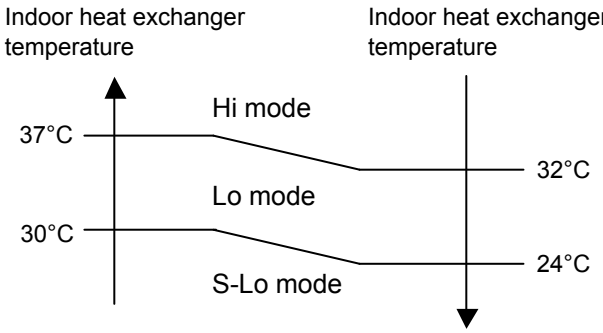


5-3. For AR*F Type

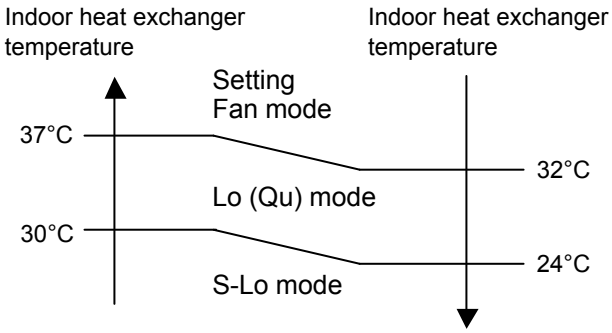
When the compressor operates, the maximum value of the indoor fan speed is set as shown in Figure 6, based on the detected temperature by the indoor heat exchanger sensor on heating mode.
When the compressor does not operate, the indoor fan motor operates [S-Lo] mode.

(Fig.6 : Cool Air Prevention Control)

< [Hi] setting >



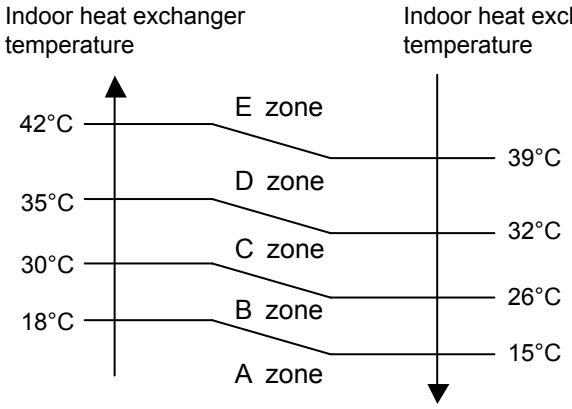
< The other of [Hi] setting >



5-4. For AS Type

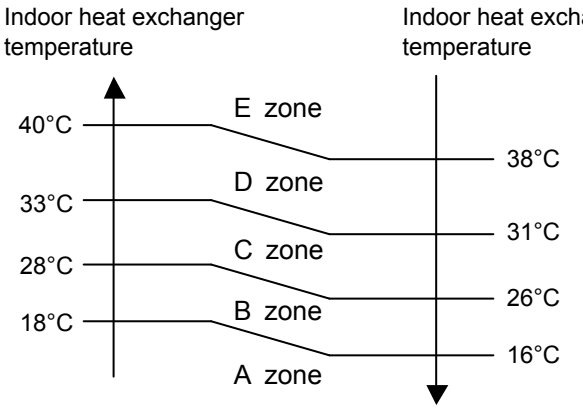
The maximum value of the indoor fan speed is set as shown in Figure 7-1,7-2, based on the fan speed mode and the detected temperature by the indoor heat exchanger sensor on heating mode.

(Fig.7-1 : Cool Air Prevention Control for AS*7/ 9/ 12LMACW)



ZONE \ Fan speed mode	AUTO	HIGH	MED	LOW	QUIET
E zone	AUTO	Setting Fan Speed			
D zone	AUTO	Me			
C zone	Lo	Lo	Lo		
B zone	S-Lo	S-Lo	S-Lo	S-Lo	S-Lo
A zone	OFF	OFF	OFF	OFF	OFF

(Fig.7-2 : Cool Air Prevention Control for AS*18/ 24LBAJ)



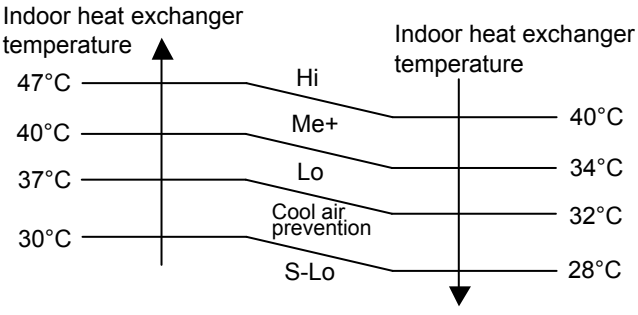
ZONE \ Fan speed mode	AUTO	HIGH	MED	LOW	QUIET
E zone	AUTO	Setting Fan Speed			
D zone	AUTO	Me			
C zone	Lo	Lo	Lo		
B zone	S-Lo	S-Lo	S-Lo	S-Lo	S-Lo
A zone	OFF	OFF	OFF	OFF	OFF

5-5. For AS*A Type

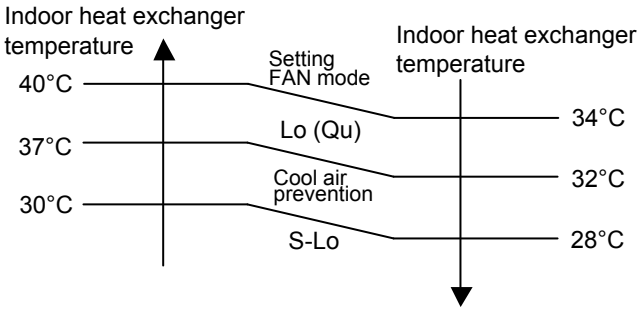
When the compressor operates, the maximum value of the indoor fan speed is set as shown in Figure 8, based on the detected temperature by the indoor heat exchanger sensor on heating mode.
When the compressor does not operate, the indoor fan motor operates [S-Lo] mode.

(Fig.8 : Cool Air Prevention Control)

< [Hi] setting >



< The other of [Hi] setting >



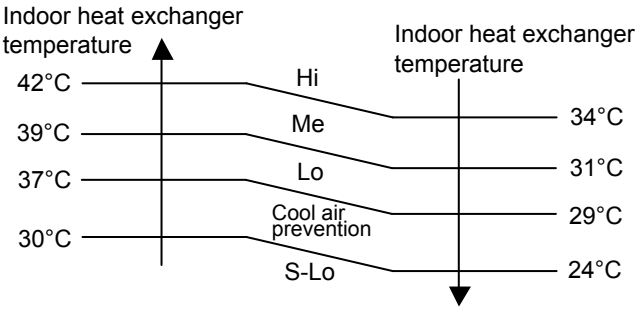
[AS*A07L: Cool air prevention 800rpm, S-Lo 480rpm]
[AS*A09L: Cool air prevention 830rpm, S-Lo 480rpm]
[AS*A12L: Cool air prevention 860rpm, S-Lo 480rpm]
[AS*A14L/ 18L: Cool air prevention 850rpm, S-Lo 480rpm]

5-6. For AG*F Type

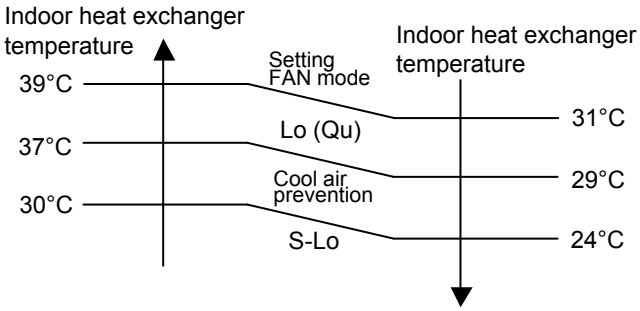
When the compressor operates, the maximum value of the indoor fan speed is set as shown in Figure 9, based on the detected temperature by the indoor heat exchanger sensor on heating mode.
When the compressor does not operate, the indoor fan motor operates [S-Lo] mode.

(Fig.9 : Cool Air Prevention Control)

< [Hi] setting >



< The other of [Hi] setting >



6. DRY OPERATION

During the dry mode operation, the fan speed setting can not be changed. (S-Lo)

4. OUTDOOR FAN CONTROL

1. Outdoor Fan Motor

Following table shows the fan speed of the outdoor unit.

(Table 3 : Fan speed of the outdoor unit)

	Cooling	Heating
AO*18LMAK2	780/ 420 rpm	780/ 420 rpm
AO*24LMAM2		
AO*30LMAW4	820/ 780/ 400/ 300/ 200 rpm	850/ 780/ 400/ 300/ 200 rpm

* For AO*18LMAK2/ 24LMAM2
  When the outdoor heat exchanger tenperature is lower than 2°C,
  the fan speed switches to 780rpm on heating mode.

* For AO*30LMAW4
  It runs at 500rpm for 20 seconds after starting up the outdoor fan.
  When the outdoor heat exchanger tenperature is lower than 2°C,
  the fan speed switches to 780rpm on heating mode.

5. LOUVER CONTROL

5-1 Compact Cassette (AU) type

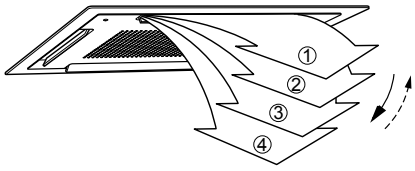
1. VERTICAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follows:

①⇄②⇄③⇄④

(Air Direction Range)



(Operation Range)

Cooling / Dry mode :
Heating mode :
Fan mode :
} ①—②—③—④

Use the air direction adjustments within the ranges shown above.

・The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.

Cooling / Dry / Fan mode : Horizontal flow ①
Heating mode : Downward flow ④

・At the start of operation if the setting louver position is ① ,the setting position is set to ① after the louver moves from totally-enclosed position to ②. (Positioning Control)

・The indoor fan motor starts after the louver reaches to the setting position.

1-2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing. The range of swing depends on the set airflow direction.

(Swinging Range)

Airflow direction set	Range of swing
①	① to ③
②	② to ④
③	② to ④
④	① to ④

・When the indoor fan is either at S-Lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.
(Stop mode means Operation stop.)

5-2 Universal (AB) type

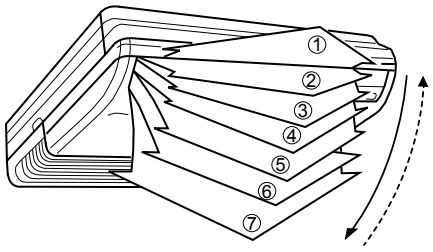
1. VERTICAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follows:

① ⇄ ② ⇄ ③ ⇄ ④ ⇄ ⑤ ⇄ ⑥ ⇄ ⑦

(Air Direction Range)



(Operation Range)

Cooling / Dry mode :
Heating mode :
Fan mode :

} ① − ② − ③ − ④ − ⑤ − ⑥ − ⑦

Use the air direction adjustments within the ranges shown above.

・The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.

Cooling / Dry / Fan mode : Horizontal flow ①
Heating mode : Downward flow ⑦

・At the start of operation if the setting louver position is ① or ② ,the setting position is set to ① or ② after the louver moves from totally-enclosed position to ③. (Positioning Control)

・The indoor fan motor starts after the louver reaches to the setting position.

1-2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing. The range of swing depends on the set airflow direction.

(Swinging Range)

Airflow direction set	Range of swing
①	① to ③
②	① to ④
③	② to ⑤
④	③ to ⑥
⑤	④ to ⑦
⑥	⑤ to ⑦
⑦	① to ⑦

・When the indoor fan is either at S-Lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.
(Stop mode means Operation stop.)

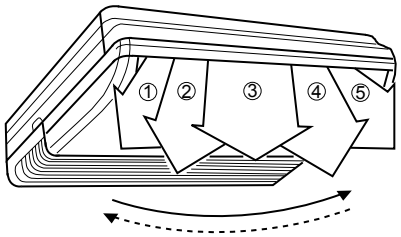
2. HORIZONTAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follows:

①⇄②⇄③⇄④⇄⑤

(Air Direction Range)



(Operation Range)

Cooling / Dry mode :
Heating mode :
Fan mode :

} ① − ② − ③ − ④ − ⑤

Use the air direction adjustments within the ranges shown above.

・The horizontal airflow direction is set automatically on ③ after initialization.

2-1. SWING OPERATION

When the swing signal is received from the remote controller, the horizontal louver starts to swing. The range of swing depends on the set airflow direction.

(Swinging Range)

Airflow direction set	Range of swing
①	① to ⑤
②	① to ③
③	② to ④
④	③ to ⑤
⑤	① to ⑤

・When the indoor fan is either at S-Lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.
(Stop mode means Operation stop.)

5-3 Wall Mounted (AS*7/ 9/ 12L) type

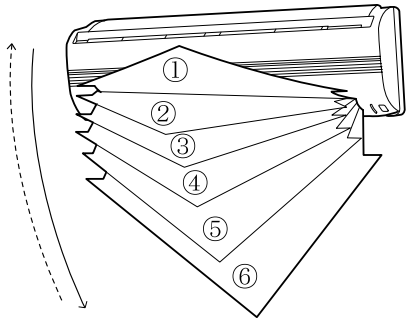
1. VERTICAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follow:

③ ⇄ ② ⇄ ① ⇄ ⑥ ⇄ ⑤ ⇄ ④

(Air Direction Range)



(Operation Range)

Cooling / Dry mode : ①－②－③

Heating mode : ④－⑤－⑥

The remote control unit's display does not change.

- Use the air direction adjustments within the ranges shown above.
- The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.
  Cooling / Dry mode : Horizontal flow ①
  Heating mode : Downward flow ⑤
- During AUTO mode operation, for the first minute after beginning operation, airflow will be horizontal ① ; the air direction cannot be adjusted during this period.

1-2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing.

(Swinging Range)

Cooling mode / Dry mode / Fan mode (①～③) : ① ⇔ ③

Heating mode / Fan mode (④～⑥) : ④ ⇔ ⑥

- When the indoor fan is either at S-lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.

5-4 Wall Mounted (AS*18/ 24L) type

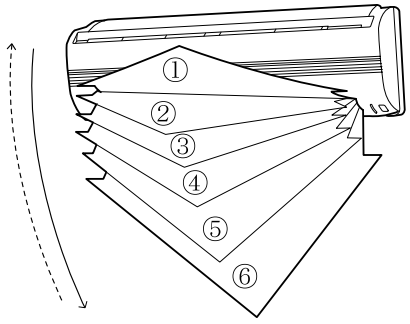
1. VERTICAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follow:

① ⇄ ② ⇄ ③ ⇄ ④ ⇄ ⑤ ⇄ ⑥

(Air Direction Range)



(Operation Range)

Cooling / Dry mode : ①－②－③

Heating mode : ①－②－③－④－⑤－⑥

The remote control unit's display does not change.

- Direction ② ⇄ ③
  Only the direction of the Moving Diffuser changes: the direction of the Air Direction Flaps does not change.
- Use the air direction adjustments within the ranges shown above.
- The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.
  ①
  ⑤
  Cooling / Dry mode : Horizontal flow
  Heating mode : Downward flow
- During AUTO mode operation, for the first minute after beginning operation, airflow will be horizontal ① ; the air direction cannot be adjusted during this period.

1-2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing. The range of swing depends on the set airflow direction.

(Swinging Range)

Airflow direction set	Range of swing
①	① to ④
②	① to ④
③	① to ④
④	③ to ⑤
⑤	④ to ⑥
⑥	① to ⑥

- When the indoor fan is either at S-Lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.
  (Stop mode means Operation stop.)

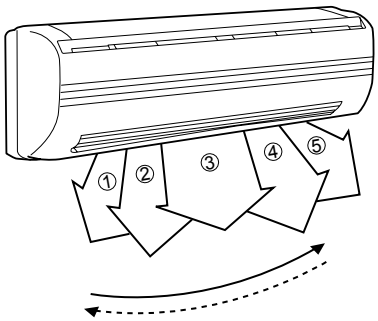
2. HORIZONTAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follows:

①⇄②⇄③⇄④⇄⑤

(Air Direction Range)



(Operation Range)

Cooling / Dry mode :
Heating mode :
Fan mode :
} ① − ② − ③ − ④ − ⑤

Use the air direction adjustments within the ranges shown above.

・The horizontal airflow direction is set automatically on ③ after initialization.

2-1. SWING OPERATION

When the swing signal is received from the remote controller, the horizontal louver starts to swing. The range of swing depends on the set airflow direction.

(Swinging Range)

Airflow direction set	Range of swing
①	① to ⑤
②	① to ③
③	② to ④
④	③ to ⑤
⑤	① to ⑤

・When the indoor fan is either at S-Lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.
(Stop mode means Operation stop.)

5-5 Wall Mounted (AS*A) type

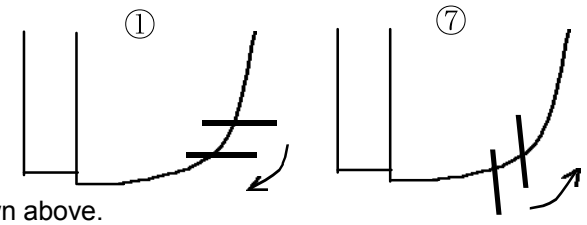
1. VERTICAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follow:

①⇄②⇄③⇄④⇄⑤⇄⑥⇄⑦

(Air Direction Range)



(Operation Range)

Cooling / Dry mode : ①－②－③
Heating mode : ④－⑤－⑥－⑦
Fan mode : ①－②－③－④－⑤－⑥－⑦

- Use the air direction adjustments within the ranges shown above.
- The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.
  Cooling / Dry mode : Horizontal flow ①
  Heating mode : Downward flow ⑦
- When the temperature of the air being blown out is low at the start of heating operation or during defrosting, the airflow direction temporarily becomes ⑦ to prevent cold air being blown onto the body.
- During use of the Cooling and Dry modes, do not set the Air Flow Direction Louver in the Heating range (④～⑦) for long period of time, since water vapor many condense near the outlet louvers and drop of water may drip from the air conditioner. During the Cooling and Dry modes, if the Air Flow Direction Louvers are left in the hating range for more than 30 minutes, they will automatically return to position ③.
- During Monitor operation in AUTO CHANGEOVER mode, the airflow direction automatically becomes ①, and it cannot be adjusted.

1-2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing.

(Swinging Range)

Cooling mode / Dry mode / Fan mode (①～③) : ① ⇔ ③
Heating mode / Fan mode (④～⑦) : ④ ⇔ ⑦

- When the indoor fan is either at S-lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.

5-6 Compact Cassette (AU*F) type

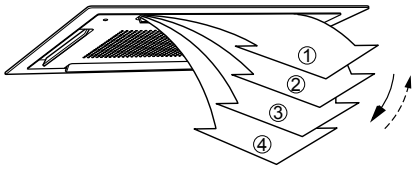
1. VERTICAL LOUVER CONTROL

(Function Range)

Each time the button is pressed, the air direction range will change as follows:

①⇄②⇄③⇄④

(Air Direction Range)



(Operation Range)

During Cooling/Dry mode/Fan mode : ①—②—③—④
During Heating mode : ②—③—④

Use the air direction adjustments within the ranges shown above.

- The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.
  Cooling / Dry / Fan mode : Horizontal flow ①
  Heating mode : Downward flow ④

- During AUTO mode operation, for the first minute after beginning operation, air-flow will be horizontal ① ; the air direction cannot be adjusted during this period.

1-2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing. The range of swing depends on the set airflow direction.

(Swinging Range)

The type of operation	Range of swing
Cooling/Dry/Fan	① to ④
Heating	② to ④

- When the indoor fan is either at S-Lo or Stop mode, the swinging operation is interrupted and the louver stops at the memorized position.
  (Stop mode means Operation stop.)

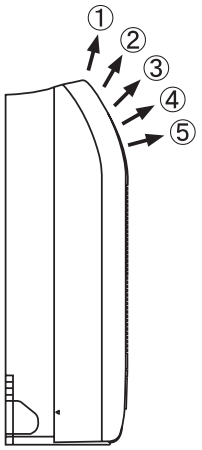
5-7 Floor (AG*F) type

1. VERTICAL LOUVER CONTROL

(Function and Operation Range)

Each time the button is pressed,
the air direction range will change as follows:

① ⇄ ② ⇄ ③ ⇄ ④ ⇄ ⑤



(Air Direction Range)

Use the air direction adjustments within the ranges shown above.

- The vertical airflow direction is set automatically as shown, in accordance with the type of operation selected.
  Cooling / Dry mode : Horizontal flow ①
  Heating mode : Downward flow ④
- When the temperature of the air being blown out is low at the start of heating operation or during defrosting, the airflow direction temporarily becomes ① to prevent cold air being blown onto the body.
- During Monitor operation in AUTO CHANGEOVER mode, the airflow direction automatically becomes ① , and it cannot be adjusted.

1-2. SWING OPERATION

When the swing signal is received from the remote controller, the vertical louver starts to swing.

(Swinging Range)

① ⇔ ⑤

- When the indoor fan is either at S-lo or Stop mode, the swinging operation is interrrupted and the louver stops at the memorized position.

6. COMPRESSOR CONTROL

1. OPERATION FREQUENCY RANGE

The operation frequency of the compressor is different based on the operation mode as shown in the table 4.

(Table 4 : Compressor Operation Frequency Range)

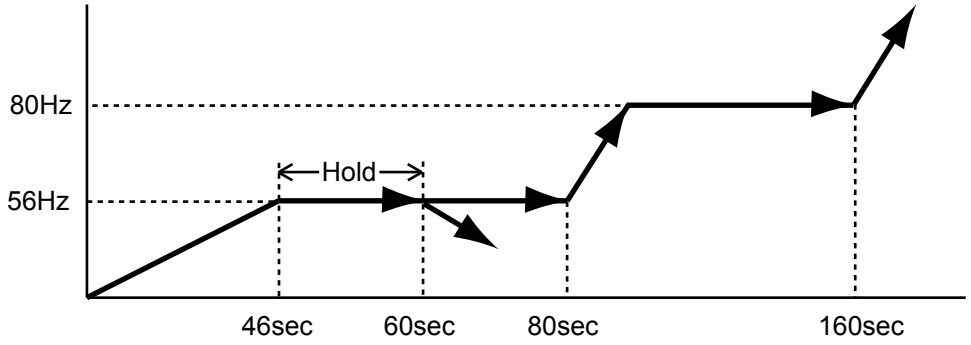
	Cooling		Heating	
	Min	Max	Min	Max
AO*18LMAK2	15Hz	80Hz	15Hz	95Hz
AO*24LMAM2	15Hz	80Hz	15Hz	95Hz
AO*30LMAW4	15Hz	90Hz	20Hz	95Hz

2. OPERATION FREQUENCY CONTROL AT START UP

2-1. For AO*18L/ 24L

The compressor frequency soon after the start-up is controlled as shown in Figure 10-1.

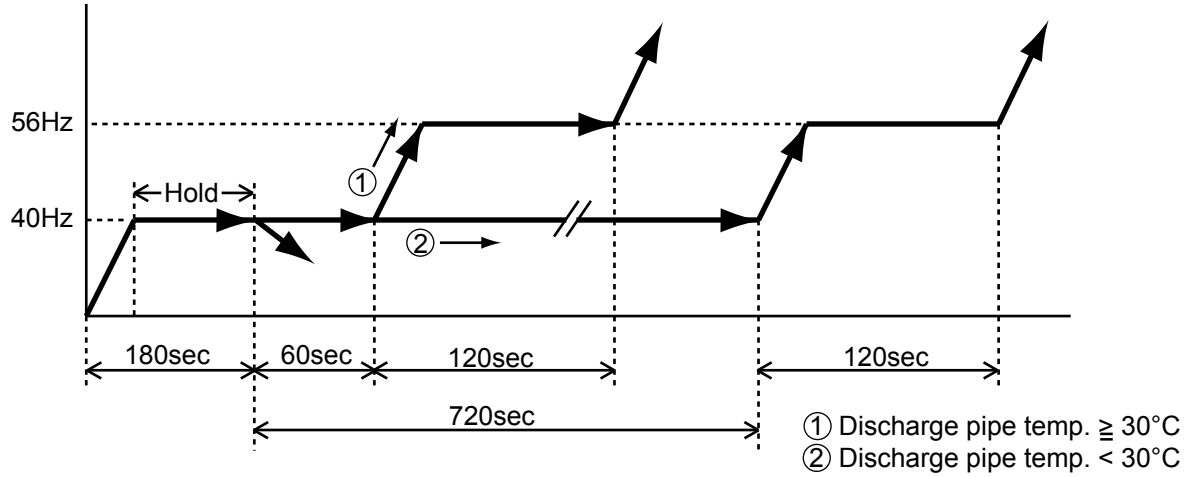
(Fig.10-1 : Compressor Control at Start-up)



2-2. For AO*30LMAW4

The compressor frequency soon after the start-up is controlled as shown in Figure 10-2.

(Fig.10-2 : Compressor Control at Start-up)



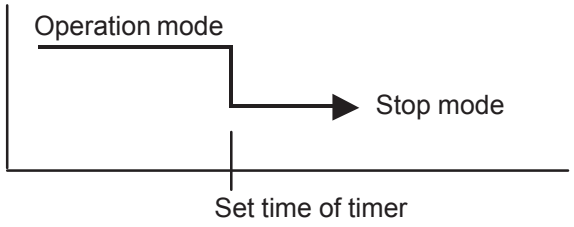
7. TIMER OPERATION CONTROL

7-1 Wireless Remote Controller (For AB/ AU/ AU*F/ AS/ AS*A/ AB*F/ AG*F type)

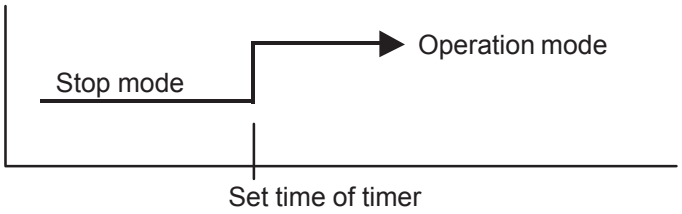
- ON / TIMER
- OFF / TIMER
- PROGRAM TIMER
- SLEEP TIMER

1. ON / OFF TIMER

・OFF timer : When the clock reaches the set time, the air conditioner will be turned off.

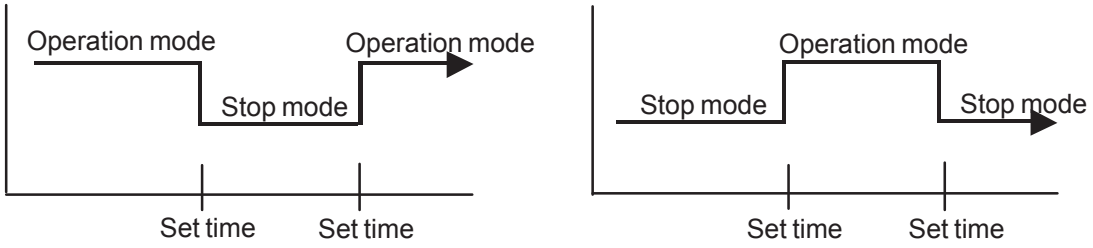


・ON timer : When the clock reaches the set time, the air conditioner will be turned on.



2. PROGRAM TIMER

・The program timer allows the OFF timer and ON timer to be used in combination one time.



・Operation will start from the timer setting (either OFF timer or ON timer) whichever is closest to the clock's current timer setting.
The order of operations is indicated by the arrow in the remote control unit's display.

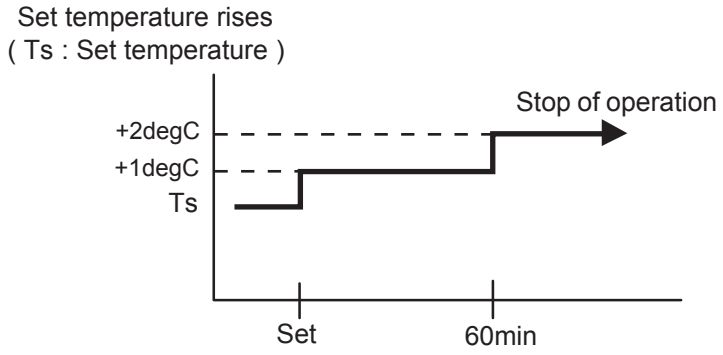
・SLEEP timer operation cannot be combined with ON timer operation.

3. SLEEP TIMER

- If the sleep timer is set, the room temperature is monitored and the operation is stopped automatically. If the operation mode or the set temperature is change after the sleep timer is set, the operation is continued according to the changed setting of the sleep timer from that time ON.

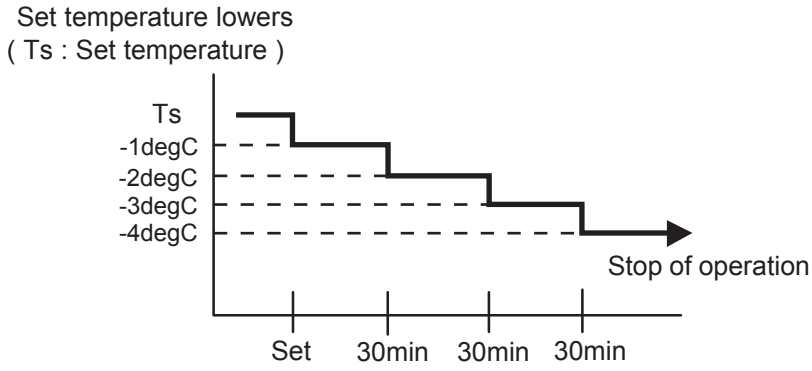
In the cooling operation mode

When the sleep timer is set, the setting temperature is increased 1 degC.
It increases the setting temperature another 1 degC after 1 hour.
After that, the setting temperature is not changed and the operation is stopped at the time of timer setting.



In the heating operation mode

When the sleep timer is set, the setting temperature is decreased 1 degC.
It decreases the setting temperature another 1 degC every 30 minutes.
Upon lowering 4 degC, the setting temperature is not changed and the operation stops at the time of timer setting.

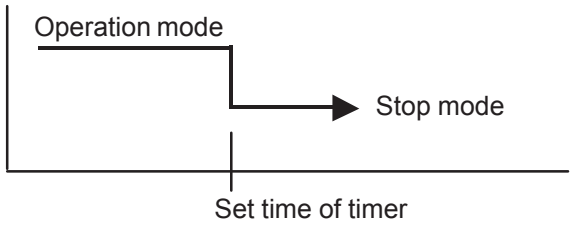


7-2 Wired Remote Controller (For AR/ AR*F type)

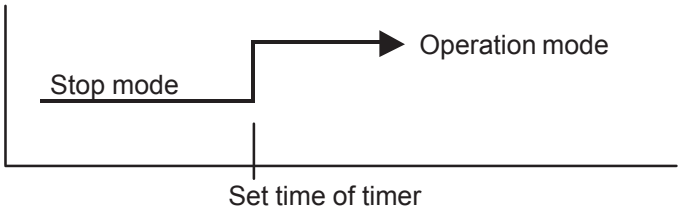
- ON / TIMER
- OFF / TIMER
- WEEKLY TIMER
- TEMPERATURE SET BACK TIMER

1. ON / OFF TIMER

・OFF timer : When the clock reaches the set time, the air conditioner will be turned off.



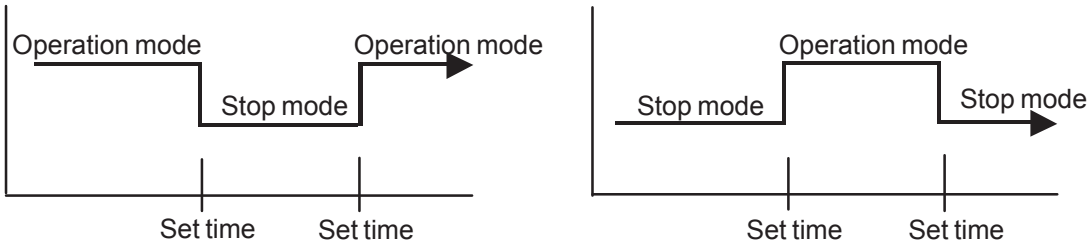
・ON timer : When the clock reaches the set time, the air conditioner will be turned on.



2. WEEKLY TIMER

2-1. WEEKLY TIMER

・Use this timer function to set operating time for each day of the week.
・The weekly timer allows up to two ON and OFF time to set up per day.

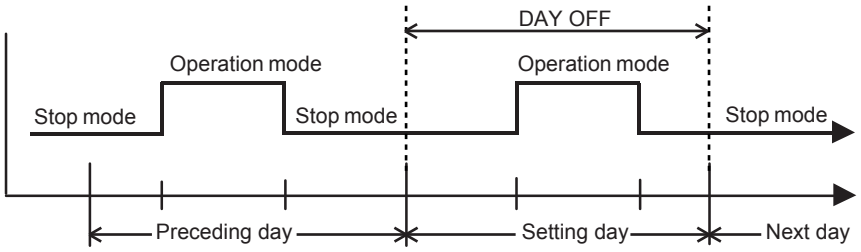


・The operating time can be set in 30 min increments only.
・The OFF time can be carried over to next day.
・The ON timer and the OFF timer functions cannot be set with using the weekly timer. Both ON and OFF time must be set.

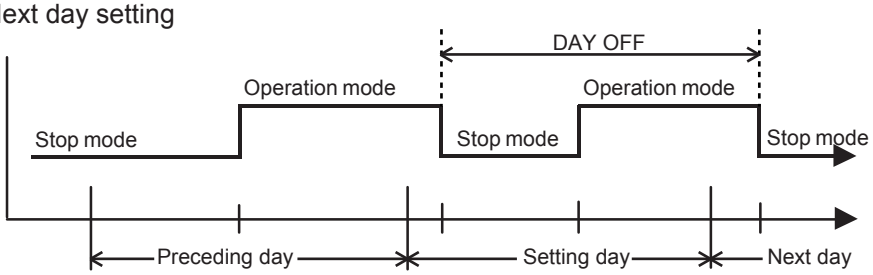
2-2. DAY OFF setting

- The DAY OFF setting is only available for days for which weekly settings already exist.
- If the operating time carries over to the next day (during a next day setting), the effective DAY OFF range will be set as shown below.

- Normal



- Next day setting

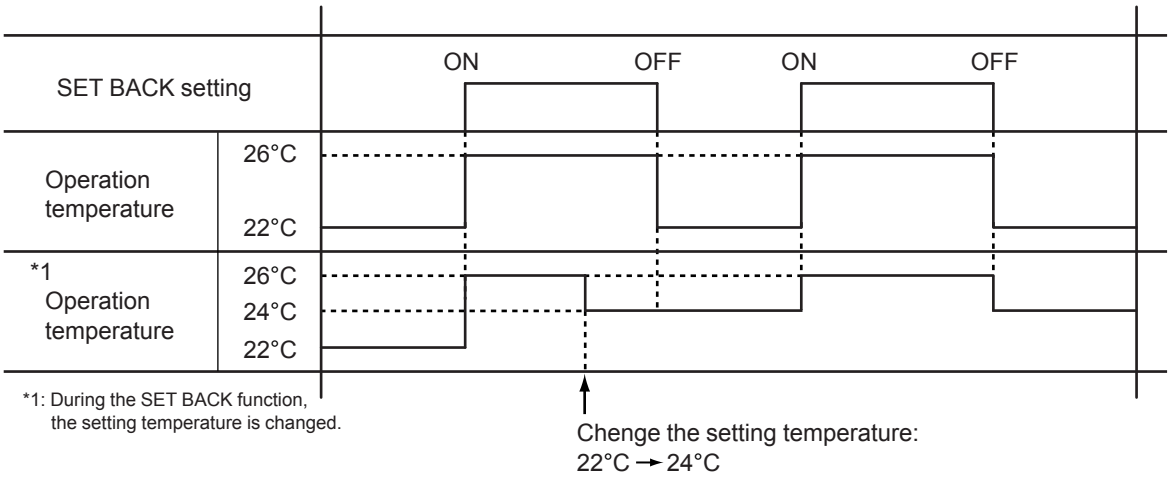


- The DAY OFF setting can only be set one time. The DAY OFF setting is cancelled automatically after the set day has passed.

3. TEMPERATURE SET BACK TIMER

- The SET BACK timer only changes the set temperature for 7 days, it cannot be used to start or stop air conditioner operation.
- The SET BACK timer can be set to operate up to two times per day but only one temperature setting can be used.
- During the COOL/DRY mode, the air conditioner will operate at a minimum of 18°C even if the SET BACK temperature is set to 17°C or lower.

Case of SET BACK timer on the Cooling operation.
(Setting temperature :22°C, SET BACK temperature :26°C)



8. ELECTRONIC EXPANSION VALVE CONTROL

The most proper opening of the electronic expansion valve is calculated and controlled under the present operating condition based on the following values.
The compressor frequency, the temperatures detected by the discharge temperature sensor and the outdoor temperature sensor.

* The pulse range of the electronic expansion valve control is between 30 to 480 pulses.
* At the time of supplying the power to the outdoor unit, the initialization of the electronic expansion valve is operated (1000 pulses are input to the closing direction).

9. TEST OPERATION CONTROL

- With Wireless Remote Controller

  Under the condition where the air conditioner runs, short two metal contacts under the battery compartment lid, and the test operation control mode will appear.
  During test running, the operation lamp and timer lamp of the air conditioner body twinkle simultaneously.
  Set the test operation mode, and the compressor will continue to run regardless of whether the room temperature sensor detects.
  The test operation mode is released if 60 minutes have passed after setting up the test operation.

- With Wireless Remote Controller (with TEST RUN button)

  Under the condition where the air conditioner runs, press the TEST RUN button, and the test operation control mode will appear.
  During test running, the operation lamp and timer lamp of the air conditioner body twinkle simultaneously.
  Set the test operation mode, and the compressor will continue to run regardless of whether the room temperature sensor detects.
  The test operation mode is released if 60 minutes have passed after setting up the test operation.

- With Wired Remote Controller (without TEST RUN button)

  Under the condition where the air conditioner stops, press the MASTER CONTROL button and the FAN CONTROL button simultaneously for 5 seconds or more, and the test operation control mode will appear.
  During test running, "01" will display on the remote controller display.
  Set the test operation mode, and the compressor will continue to run regardless of whatever the room temperature sensor detects.
  The test operation mode is released if 60 minutes have passed after setting up the test operation.

10. PREVENT TO RESTART FOR 3 MINUTES (3 MINUTES ST)

The compressor won't enter operation status for 3 minutes after the compressor is stopped, even if any operation is given.

11. 4-WAY VALVE EXTENSION SELECT

At the time when the air conditioner is switched from the cooling mode to heating mode, the compressor is stopped, and the 4-way valve is switched in 3 minutes later after the compressor stopped.

12. AUTO RESTART

When the power was interrupted by a power failure, etc. during operation, the operation contents at that time are memorized and when power is recovered, operation is automatically resumed with the memorized operation contents.
When the power is interrupted and recovered during timer operation, timer operation is canceled, but only setting time is memorized.

[Operation contents memorized when the power is interrupted]

- Operation mode
- Set temperature
- Set air flow
- Timer mode and timer time
- Air flow Direction
- Swing
- Thermistor detected position (For AU*F model wih wired remote controller)
- 10°C HEAT (For AG*F model)

13. MANUAL AUTO OPERATION (Indoor unit body operation)

If MANUAL AUTO Button is set, the operation is controlled as shown in Table 5.
If the remote control is lost or battery power dissipated, this function will work without the remote control.

(Table 5 : Manual auto operation)

OPERATION MODE	Auto changeover
FAN CONT. MODE	Auto
TIMER MODE	Continuous (No timer setting available)
SETTING TEMP.	23°C or 24°C
SETTING LOUVER	Standard
SWING	OFF

14. COMPRESSOR PREHEATING

When the outdoor heat exchanger temperature is lower than Operation temperature (Refer to Table 6) and the heating operation has been stopped for 3 hours, power is applied to the compressor and the compressor is heated.
(By heating the compressor, warm air is quickly discharged when operation is started.)
When operation was started, and when the outdoor temperature rises to Release temperature or greater, preheating is over.

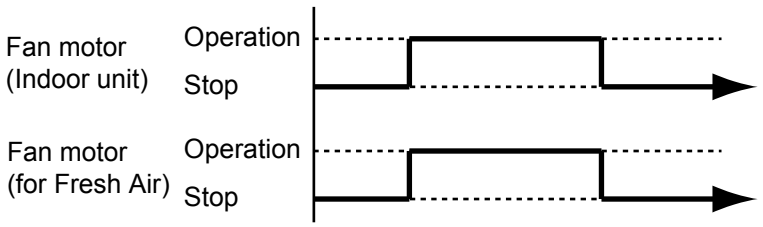
(Table 6 : Preheating Operation / Release Temperature)

Before 24 hour		After 24 hour	
Operation temperature	Release temperature	Operation temperature	Release temperature
3°C	7°C	0°C	4°C

15. FRESH AIR CONTROL (For AR type)

The fan motor for Fresh Air is operated in synchronization with the indoor fan operation as shown in Figure 11.

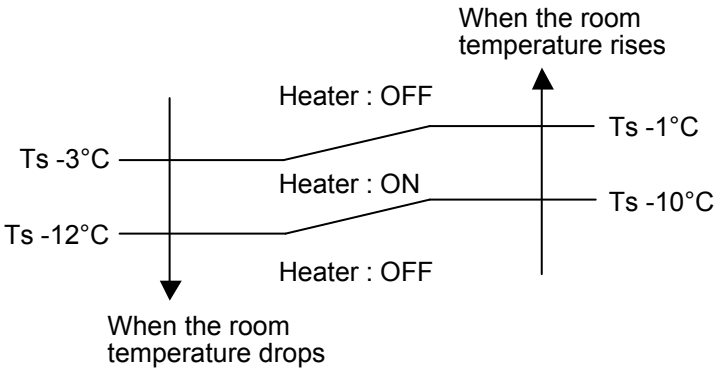
(Fig.11 : Fresh air control)



16. EXTERNAL ELECTRICAL HEATER CONTROL (For AR type)

The external electrical heater is operated as shown in Figure 12.

(Fig.12 : External electrical heater control)



- Ts : Setting temperature
- When the compressor stop, External electrical heater is OFF.

17. COIL DRY OPERATION CONTROL (For AS*A/ AG*F type)

The coil-dry operation functions by pressing COIL DRY button on the remote controller.
The coil-dry operation is consisted of 3 cycles of [Fan operation 3 minutes / Heating operation 2 minutes], and Fan operates for 3 minutes at last before ending the air conditioner operation.
(It takes 18 minutes to complete the coil-dry operation.)

18. DEFROST OPERATION CONTROL

1. CONDITION OF STARTING THE DEFROST OPERATION

1-1. For AO*18LMAK2/ 24LMAM2

The defrost operation starts when the outdoor heat exchanger temperature sensor detects the temperature lower than the values shown in Table 7-1.

(Table 7-1 : Condition of starting Defrost Operation)

Compressor integrating operation :Less than 40min.	Compressor integrating operation :40min and over	
	Less than 6 min. *1 or 10min. *2	After 6 min. *1 or 10min. *2
Does not operate		-8°C

*1. It means contiguous operation time.
*2. Compressor stop time:
Below 20min. → Select 6min.
Above 20min. → Select 10min.

1-2. For AO*30LMAW4

The defrost operation starts when the outdoor heat exchanger temperature sensor detects the temperature lower than the values shown in Table 7-2.

(Table 7-2 : Condition of starting Defrost Operation)

Compressor integrating operation :Less than 45min.	Compressor integrating operation :45min and over	
	Less than 6 min. *1 or 10min. *2	After 6 min. *1 or 10min. *2
Does not operate		-8°C *3 -10°C *4

*1. It means contiguous operation time.
*2. Compressor stop time:
Below 20min. → Select 6min.
Above 20min. → Select 10min.
*3. Outdoor temp. ≧ -1°C
*4. Outdoor temp. < -1°C

2. CONDITION OF THE DEFROST OPERATION COMPLETION

2-1. For AO*18LMAK2/ 24LMAM2

Defrost operation is released when the conditions become as shown in Table 8-1.

(Table 8-1 : Defrost Release Condition)

Release Condition
Outdoor heat exchanger temperature sensor value is higher than 10°C or Compressor operation time has passed 15 minutes.

2-2. For AO*30LMAW4

Defrost operation is released when the conditions become as shown in Table 8-2.

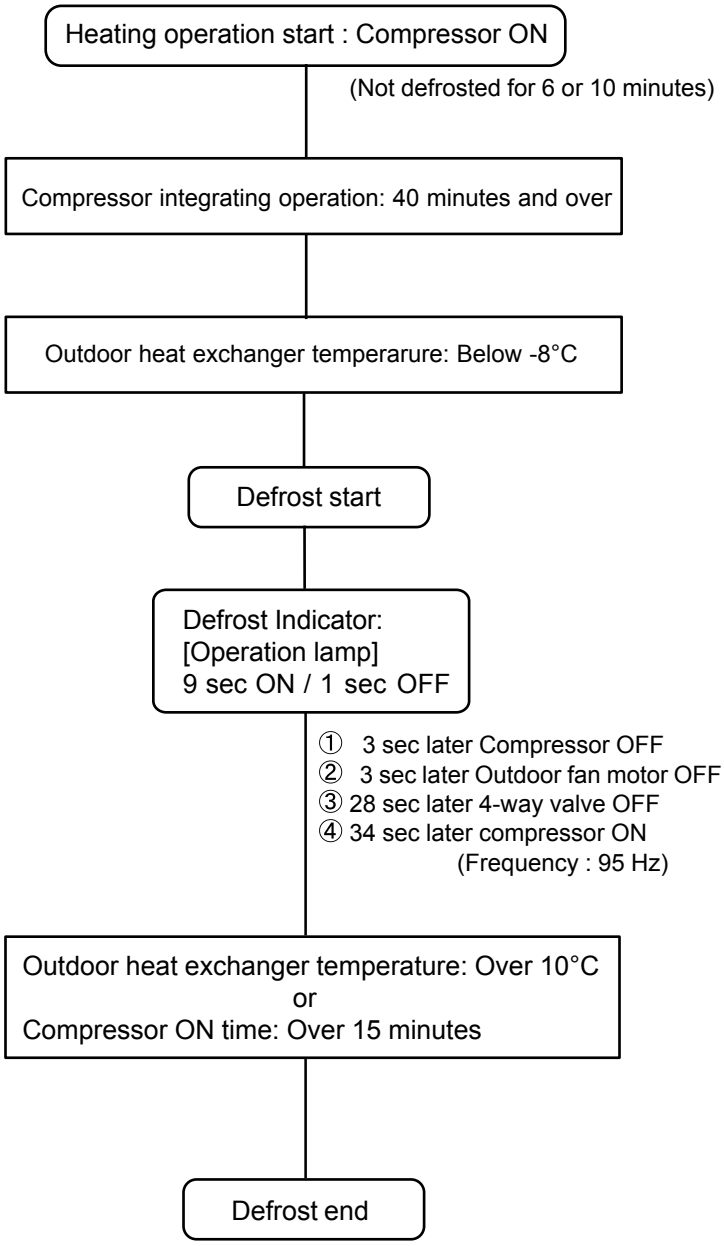
(Table 8-2 : Defrost Release Condition)

Release Condition
Outdoor heat exchanger temperature sensor value is higher than 12°C or Compressor operation time has passed 15 minutes.

3. Defrost Flow Chart

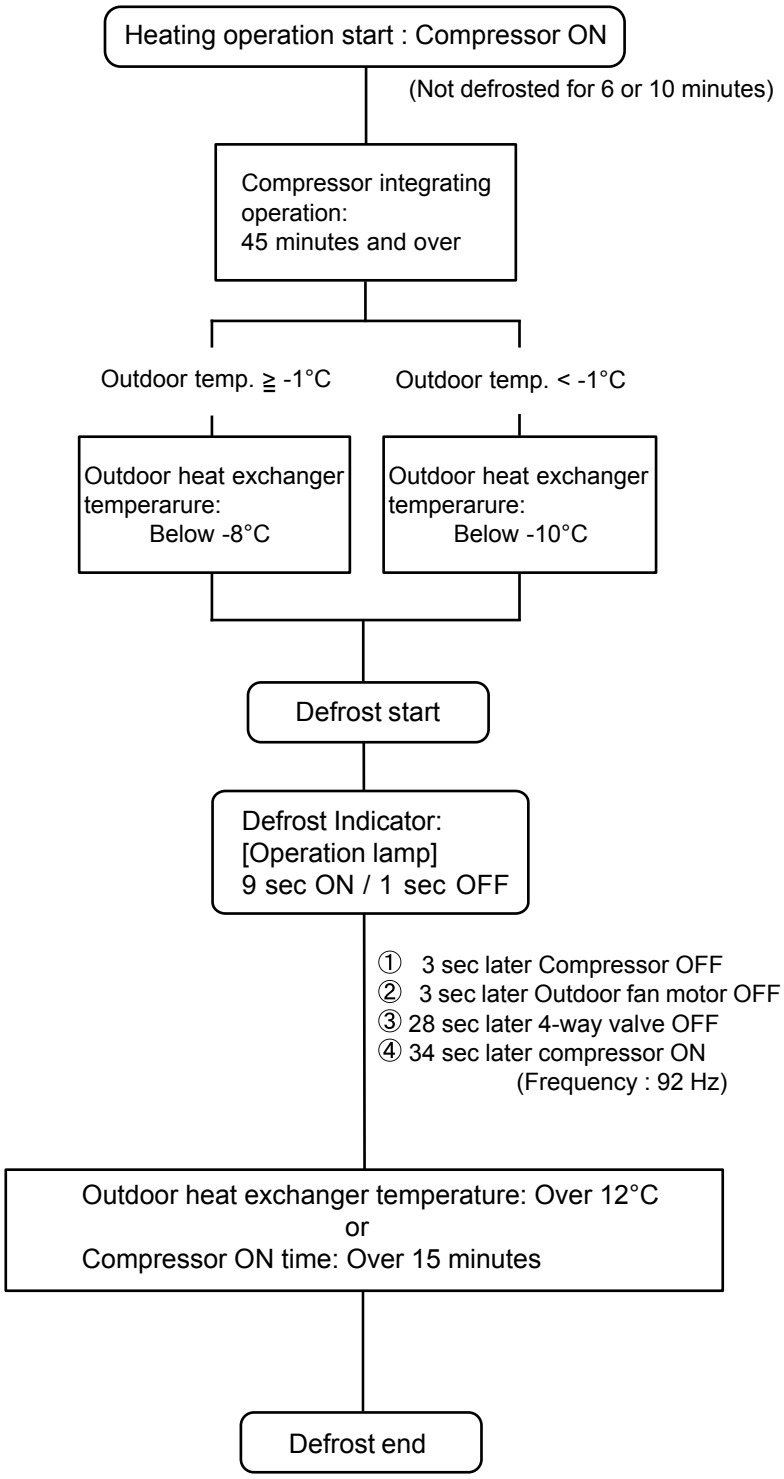
3-1. For AO*18LMAK2/ 24LMAM2

The defrosting shall proceed by the integrating operation time as follows.



3-2. AO*30LMAW4

The defrosting shall proceed by the integrating operation time and outdoor heat exchanger temperature as follows.



19. DRAIN PUMP OPERATION (For AU type)

· During Cooling / Dry operation

1. When the compressor starts, the drain pump starts simultaneously.
2. The drain pump operates continuously for 3 minutes after the compressor is turned off.
3. When the compressor stops by the "Indoor heat exchanger de-icing function", the drain pump is turned off in 1 hour after the compressor stops.
4. When the water level in the drain pan rises up and then the float switch functions:
   ① The compressor, indoor and outdoor fan motor operation are stopped.
   ② Drain pump operates continuously for 3 minutes after the float switch is turned off. (Almost condensing water may be drained)
5. When the float switch turns ON continuously for 3 min., "FAILURE INDICATION" operates.
6. When the float switch turns OFF within 3 min., the unit starts cooling operation.

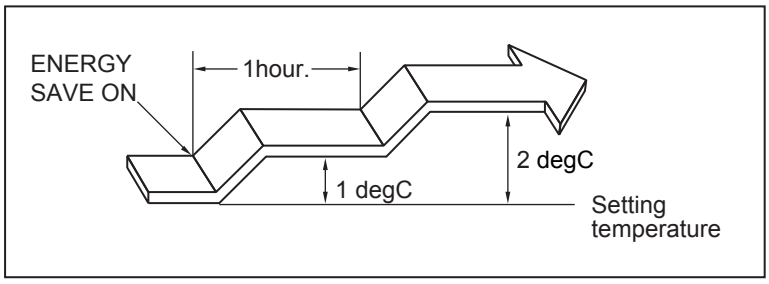
· During Heating / Fan / Stop operation

1. When the water level in the drain pan rises up and then the float switch functions:
   ① Drain pump operates continuously for 3 minutes after the float switch is turned off. (Almost condensing water may be drained)
2. When the float switch turns ON continuously for 3 min., "FAILURE INDICATION" operates.

20. ENERGY SAVE FUNCTION (For AR type)

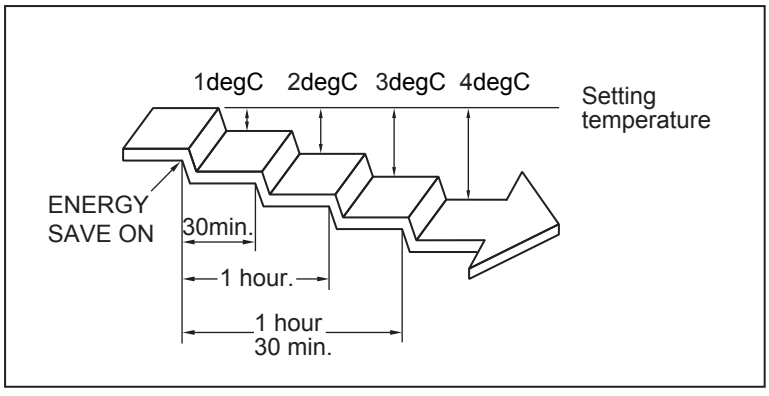
1. During Cooling / Dry operation:

The thermostat temperature setting increases by 1 degC as soon as the ENERGY SAVE button is pressed, and then increases by 1 degC after 1 hour later.
Afterwards, energy consumption is saved by continuing to cool or dry at a thermostat temperature of 2 degC higher than setting temperature.



2. During Heating operation:

The thermostat temperature setting decreases by 1 degC as soon as the ENERGY SAVE button is pressed, and then decreases by another 1 degC every 30 minutes.
Afterwards, energy consumption is saved by continuing to heat at a thermostat temperature of 4 degC lower than setting temperature.



21. VARIOUS PROTECTIONS

1. DISCHARGE GAS TEMPERATURE OVER RISE PREVENTION CONTROL

The discharge gas thermosensor (discharge thermistor : Outdoor side) will detect discharge gas temperature.

When the discharge temperature becomes higher than 110°C ,the compressor frequency is decreased 10 Hz, and it continues to decrease the frequency for 10 Hz every 120 seconds until the temperature becomes lower than 110°C .
When the discharge temperature becomes lower than 105°C ,the control of the compressor frequency is released.

When the discharge temperature becomes higher than 120°C ,the compressor stops.
When the discharge temperature becomes lower than 80°C ,the compressor operates.

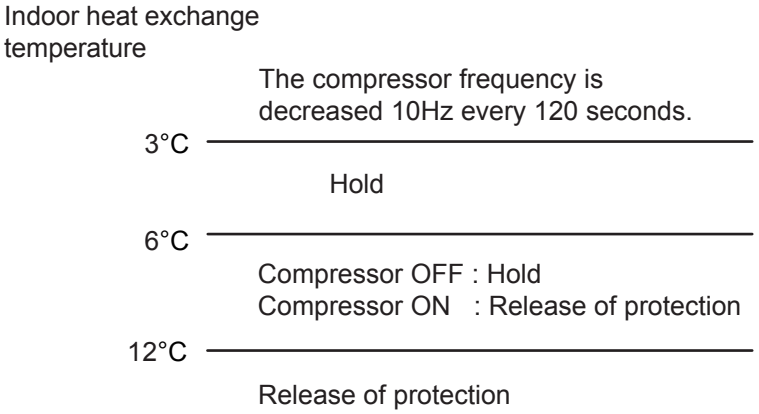
2. CURRENT RELEASE CONTROL

The compressor frequency is controlled so that the outdoor unit input current does not exceeds the current limit velue that was set up with the outdoor temperature.
The compressor frequency returns to the designated frequency of the indoor unit at the time when the frequency becomes lower than the release value.

3. ANTI-FREEZING CONTROL (Cooling mode)

The compressor frequency decreases on cooling mode when the indoor heat exchanger temperature sensor detects the temperature lower than 3°C.
Then, the anti-freezing control is released when it becomes higher than 6°C.

(Fig 13 : Anti-freezing Protection Operation / Release Temperature)



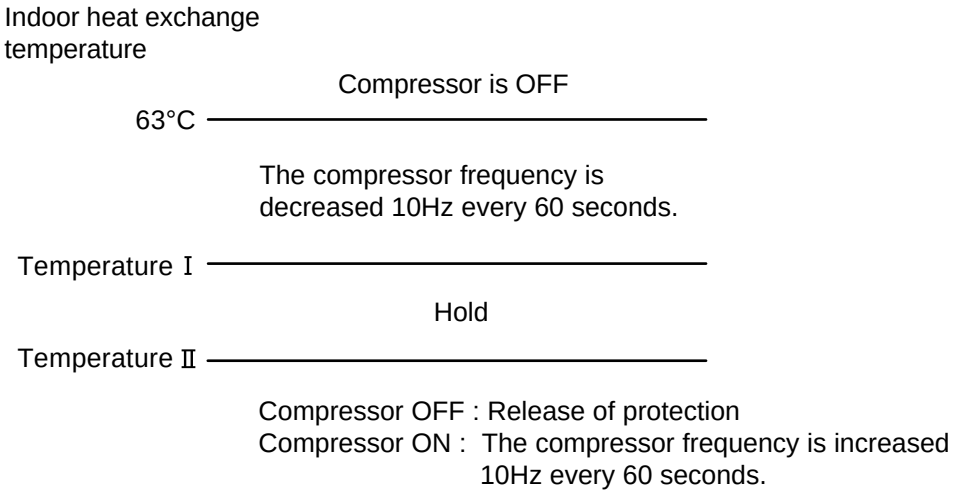
4. COOLING PRESSURE OVER RISE PROTECTION

When the outdoor unit heat exchange sensor temperature rises to 70.5°C or greater, the compressor is stopped and error display is indicated.

5. HIGH TEMPERATURE RELEASE CONTROL (HEATING MODE)

On heating mode, the compressor frequency is controlled as following based on the detection value of the indoor heat exchanger temperature sensor.

(Fig 14 : Heating Overload Protection Control)



	Temperature Ⅰ	Temperature Ⅱ
AO*18LMAK2	54°C	50°C
AO*24LMAM2		
AO*30LMAW4	56°C	52°C

6. HIGH PRESSURE PROTECTION

(1). When the pressure switch becomes OFF (Open : higher than 609.2 psi / 4.2 MPa), the compressor is stopped.
It is released when the pressure switch becomes ON (Close : lower than 464.1 psi / 3.2 MPa) after 3 minutes of compressor stop.

(2). When the pressure switch is opened for 10 seconds from power on, all of outdoor unit operation is stopped. The outdoor unit will start up if the pressure switch is returned to ON after 10 seconds has passed.

When 10 minutes (Cooling) or 3 minutes (Heating) has passed from the compressor stop and pressure switch becomes ON, protection is released and the compressor will restart.

7. COMPRESSOR TEMPERATURE PROTECTION

Compressor temperature sensor is monitoring the compressor temperature.
When the compressor temperature sensor detects higher than Temperature Ⅰ, the compressor is stopped.

When 3 minutes has passed from the compressor stop and the compressor temperature sensor detects lower than Temperature Ⅱ, protection is released and the compressor will restart.

	Temperature Ⅰ	Temperature Ⅱ	Sensor type
AO*18LMAK2	120±5°C	85±7°C	Thermal switch
AO*24LMAM2			
AO*30LMAW4	130°C	80°C	Thermistor

Refrigerant
R410A

Universal Floor / Ceiling
Duct / Cassette
Wall Mounted / Floor type
INVERTER (MULTI)

2 . TROUBLE SHOOTING

2. TROUBLESHOOTING

2-1 ERROR DISPLAY

2-1-1 INDOOR UNIT DISPLAY

1. ERROR DISPLAY

Please refer the blinking pattern as follows.

For AS*7/ 9/ 12LMACW

Operation lamp : Red lamp
Timer lamp : Green lamp

○ : Fast flashing
● : Slow flashing

Large division indication			Small division indication			Trouble shooting
Error contents	LED indication		Error contents	LED indication		
Thermistor error (indoor unit)	Red lamp Green lamp	● (2 times) ○	Room temperature thermistor error	Red lamp Green lamp	○ ● (2 times)	3
			Indoor heat exchanger temperature thermistor error	Red lamp Green lamp	○ ● (3 times)	4
Control unit error (indoor unit)	Red lamp Green lamp	● (4 times) ○	Forced auto switch error	Red lamp Green lamp	○ ● (2 times)	25
			Power supply frequency detection error	Red lamp Green lamp	○ ● (4 times)	26
Serial error	Red lamp Green lamp	● (5 times) ○	Communication error (Serial reverse transfer error)	Red lamp Green lamp	○ ● (2 times)	2
			Outdoor communication signal error (Forward transfer signal error)	Red lamp Green lamp	○ ● (3 times)	11
Fan motor error (indoor unit)	Red lamp Green lamp	● (6 times) ○	Indoor fan motor lock error	Red lamp Green lamp	○ ● (2 times)	10
			Indoor fan motor speed error	Red lamp Green lamp	○ ● (3 times)	
Thermistor error (outdoor unit)	Red lamp Green lamp	○ ● (2 times)	Outdoor discharge pipe temperature thermistor error	Red lamp Green lamp	● (2 times) ○	8
			Outdoor heat exchanger temperature thermistor error	Red lamp Green lamp	● (4 times) ○	5
			Outdoor temperature thermistor error	Red lamp Green lamp	● (6 times) ○	7
			Compressor temperature thermistor error	Red lamp Green lamp	● (8 times) ○	12
			2-way valve temperature thermistor error	Red lamp Green lamp	● (9 times) ○	21
			3-way valve temperature thermistor error	Red lamp Green lamp	● (10 times) ○	22
Pressure switch error	Red lamp Green lamp	○ ● (3 times)	Pressure switch error	Red lamp Green lamp	● (2 times) ○	13
Control unit error (outdoor unit)	Red lamp Green lamp	○ ● (4 times)	Connected indoor unit error	Red lamp Green lamp	● (2 times) ○	23
			Outdoor unit fan motor error	Red lamp Green lamp	● (3 times) ○	18
Inverter error	Red lamp Green lamp	○ ● (5 times)	IPM error	Red lamp Green lamp	● (2 times) ○	14
			Compressor rotor location cannot detect (permanent stop)	Red lamp Green lamp	● (5 times) ○	17
Indoor EEPROM abnormal error	Red lamp Green lamp	○ ○	Indoor EEPROM abnormal (Model No.)	Red lamp Green lam	● (2 times) ○	9

When an error occurs, "Large division indication" is indicated first.
Secondly, "Small division indication" is indicated by pushing "Test run" button of remote controller.

For AS*18/ 24LBAJ
For AB*14L - 24L / AU*12L - 18L

The OPERATION, TIMER and SWING lamps operate as follows according to the error contents.

Error contents	Error display			Trouble shooting
	OPERARION (RED)	TIMER (GREEN)	SWING (ORANGE)	
Indoor EEPROM abnormal (Model No.)	○	○	–	9
Room temperature thermistor error (Opened)	2 times ●	○	–	3
Room temperature thermistor error (Short circuited)	2 times ●	○	○	
Indoor heat exchanger temperature thermistor error (Opened)	3 times ●	○	–	4
Indoor heat exchanger temperature thermistor error (Short circuited)	3 times ●	○	○	
Water drain abnormal	4 times ●	○	–	6
Communication error (Serial reverse transfer error)	5 times ●	○	–	2
Outdoor communication signal error (Forward transfer signal error)	5 times ●	○	○	11
Indoor fan error	6 times ●	○	–	10
Outdoor heat exchanger temperature thermistor error	○	3 times ●	–	5
Outdoor temperature thermistor error	○	4 times ●	–	7
Outdoor discharge pipe temperature thermistor error	○	5 times ●	–	8
Compressor temperature thermistor error	○	8 times ●	–	12
Pressure switch error	○	9 times ●	–	13
2-way valve temperature thermistor error	○	–	2 times ●	21
3-way valve temperature thermistor error	○	–	3 times ●	22
Connected indoor unit error	○	–	4 times ●	23
IPM error	○	10 times ●	–	14
Compressor rotor location cannot detect (permanent stop)	○	13 times ●	–	17
Outdoor unit fan motor error	○	14 times ●	–	18
Main CPU-Sub CPU communication error	○	–	5 times ●	24

○ : Fast flashing ● : Slow flashing – : Off

For AS*A07 - 18LACM

The OPERATION, TIMER, AIR CLEAN and COIL DRY lamps operate as follows according to the error contents.

Error contents	Error display				Trouble shooting
	OPERATION (RED)	TIMER (GREEN)	AIR CLEAN or QUIET (GREEN)	COIL DRY (ORANGE)	
Communication error (Serial reverse transfer error)	—	2 times ○ 3 times	—	—	2
Outdoor communication signal error (Forward transfer signal error)	—	4 times ○ 5 times	—	—	11
Communication error (indoor unit ← remote control)	—	8 times ○	—	—	1
Room temperature thermistor error	2 times ○	2 times ○	—	—	3
Indoor heat exchanger temperature thermistor (middle) error	2 times ○	3 times ○	—	—	4
Outdoor discharge pipe temperature thermistor error	3 times ○	2 times ○	—	—	8
Outdoor heat exchanger temperature thermistor error	3 times ○	3 times ○	—	—	5
Outdoor temperature thermistor error	3 times ○	4 times ○	—	—	7
Heat sink temperature thermistor error	3 times ○	7 times ○	—	—	19
Compressor temperature thermistor error	3 times ○	8 times ○	—	—	12
2-way valve temperature thermistor error	3 times ○	—	2 times ○	—	21
3-way valve temperature thermistor error	3 times ○	—	3 times ○	—	22
Forced auto switch error	4 times ○	2 times ○	—	—	25
Power supply frequency detection error	4 times ○	4 times ○	—	—	26
VDD permanence stop protection (Electric air clean)	4 times ○	7 times ○	—	—	34
Reverse-VDD permanence stop protection (Electric air clean power supply circuit abnormal)	4 times ○	8 times ○	—	—	35
IPM error	5 times ○	2 times ○	—	—	14
CT error	5 times ○	3 times ○	—	—	15
Compressor rotor location cannot detect (permanent stop)	5 times ○	5 times ○	—	—	17
Outdoor unit fan motor error	5 times ○	6 times ○	—	—	18
Connected indoor unit error	5 times ○	7 times ○	—	—	23
Main CPU-Sub CPU communication error	5 times ○	8 times ○	—	—	24
Indoor fan motor abnormal	6 times ○	2 times ○ 3 times	—	—	10
Discharge temperature error	7 times ○	2 times ○	—	—	30
Pressure switch error	7 times ○	5 times ○	—	—	13
Active filter module (AFM) error	8 times ○	2 times ○ 3 times	—	—	16
Indoor EEPROM abnormal (Model No.)	Continuous blink	Continuous blink	Continuous blink	Continuous blink	9

○ : 0.5s ON / 0.5s OFF (Flash) — : OFF

For AG*F09 - 14LAC

The OPERATION, TIMER and 10°C HEAT lamps operate as follows according to the error contents.

Error contents	Error display			Trouble shooting
	OPERATION (GREEN)	TIMER (ORANGE)	10°C HEAT (GREEN)	
Communication error (Serial reverse transfer error)	—	2 times 3 times ○	—	2
Outdoor communication signal error (Forward transfer signal error)	—	4 times 5 times ○	—	11
Communication error (indoor unit ← remote control)	—	8 times ○	—	1
Room temperature thermistor error	2 times ○	2 times ○	—	3
Indoor heat exchanger temperature thermistor (middle) error	2 times ○	3 times ○	—	4
Outdoor discharge pipe temperature thermistor error	3 times ○	2 times ○	—	8
Outdoor heat exchanger temperature thermistor error	3 times ○	3 times ○	—	5
Outdoor temperature thermistor error	3 times ○	4 times ○	—	7
Forced auto switch error	4 times ○	2 times ○	—	25
Main relay welded	4 times ○	3 times ○	—	38
IPM error	5 times ○	2 times ○	—	14
CT error	5 times ○	3 times ○	—	15
Compressor rotor location cannot detect (permanent stop)	5 times ○	5 times ○	—	17
Outdoor unit fan motor error	5 times ○	6 times ○	—	18
Indoor fan lock error	6 times ○	2 times ○	—	10
Indoor UPPER fan speed error	6 times ○	3 times ○	—	
Indoor LOWER fan lock error	6 times ○	—	2 times ○	
Indoor LOWER fan speed error	6 times ○	—	3 times ○	
Damper error (UPPER & LOWER air flow)	6 times ○	—	4 times ○	39
Damper error (UPPER air flow)	6 times ○	5 times ○	—	
Damper error	6 times ○	—	5 times ○	40
Discharge temperature error	7 times ○	2 times ○	—	30
Indoor EEPROM abnormal (Model No.)	Continuous blink	Continuous blink	Continuous blink	9

○ : 0.5s ON / 0.5s OFF (Flash) — : OFF

For AU*F09 - 18LAL
AB*F14 - 24LAT, AB*F14 - 24LBT

The OPERATION, TIMER and FILTER lamps operate as follows according to the error contents.

Error contents	Error display			Trouble shooting
	OPERATION (GREEN)	TIMER (ORANGE)	FILTER (RED)	
Communication error (Serial reverse transfer error)	—	2 times ○ 3 times	—	2
Outdoor communication signal error (Forward transfer signal error)	—	4 times ○ 5 times	—	11
Communication error (Main PCB → Display PCB)	—	6 times ○	—	27
Communication error (Main PCB ← Display PCB)	—	7 times ○	—	28
Communication error (indoor unit ← remote control)	—	8 times ○	—	1
Room temperature thermistor error	2 times ○	2 times ○	—	3
Indoor heat exchanger temperature thermistor (middle) error	2 times ○	3 times ○	—	4
Indoor heat exchanger temperature thermistor (inlet) error	2 times ○	4 times ○	—	
Outdoor discharge pipe temperature thermistor error	3 times ○	2 times ○	—	8
Outdoor heat exchanger temperature thermistor error	3 times ○	3 times ○	—	5
Outdoor temperature thermistor error	3 times ○	4 times ○	—	7
Heat sink temperature thermistor error	3 times ○	7 times ○	—	19
Compressor temperature thermistor error	3 times ○	8 times ○	—	12
2-way valve temperature thermistor error	3 times ○	—	2 times ○	21
3-way valve temperature thermistor error	3 times ○	—	3 times ○	22
Forced auto switch error	4 times ○	2 times ○	—	25
IPM error	5 times ○	2 times ○	—	14
CT error	5 times ○	3 times ○	—	15
Compressor rotor location cannot detect (permanent stop)	5 times ○	5 times ○	—	17
Outdoor unit fan motor error	5 times ○	6 times ○	—	18
Connected indoor unit error	5 times ○	7 times ○	—	23
Main CPU-Sub CPU communication error	5 times ○	8 times ○	—	24
Indoor fan motor abnormal	6 times ○	2 times ○ 3 times	—	10
Discharge temperature error	7 times ○	2 times ○	—	30
4-way valve error	7 times ○	4 times ○	—	32
Pressure switch error	7 times ○	5 times ○	—	13

○ : 0.5s ON / 0.5s OFF (Flash) — : OFF

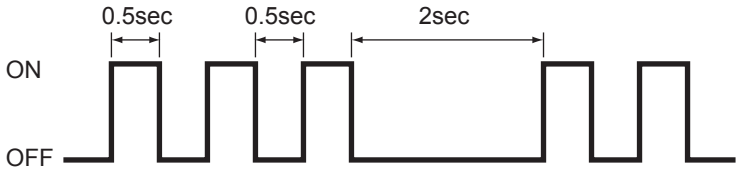
2-1-2 OUTDOOR UNIT DISPLAY

1. ERROR DISPLAY

Error Contents	LED				Trouble shooting
	A	B	C	D	
Outdoor communication signal error (Forward transfer signal error)	1 times blink	OFF	OFF	OFF	11
	OFF	1 times blink	OFF	OFF	
	OFF	OFF	1 times blink	OFF	
	OFF	OFF	OFF	1 times blink	
Outdoor discharge pipe temperature thermistor error	2 times blink	OFF	OFF	OFF	8
Outdoor heat exchanger temperature thermistor error	3 times blink	OFF	OFF	OFF	5
Outdoor temperature thermistor error	4 times blink	OFF	OFF	OFF	7
2-way valve temperature thermistor A error	5 times blink	OFF	OFF	OFF	21
2-way valve temperature thermistor B error	OFF	5 times blink	OFF	OFF	
2-way valve temperature thermistor C error	OFF	OFF	5 times blink	OFF	
2-way valve temperature thermistor D error	OFF	OFF	OFF	5 times blink	
3-way valve temperature thermistor A error	6 times blink	OFF	OFF	OFF	22
3-way valve temperature thermistor B error	OFF	6 times blink	OFF	OFF	
3-way valve temperature thermistor C error	OFF	OFF	6 times blink	OFF	
3-way valve temperature thermistor D error	OFF	OFF	OFF	6 times blink	
Compressor temperature thermistor error	7 times blink	OFF	OFF	OFF	12
Heat sink temperature thermistor error	8 times blink	OFF	OFF	OFF	19
Pressure switch 1 error	9 times blink	OFF	OFF	OFF	13
Pressure switch 2 error	10 times blink	OFF	OFF	OFF	
Connected indoor unit error	11 times blink	OFF	OFF	OFF	23
IPM error	12 times blink	OFF	OFF	OFF	14
Compressor rotor location cannot detect (permanent stop)	13 times blink	OFF	OFF	OFF	17
Compressor Start-up error (permanent stop)	14 times blink	OFF	OFF	OFF	20
Outdoor unit fan motor error	15 times blink	OFF	OFF	OFF	18
Main CPU - sub CPU communication error	17 times blink	OFF	OFF	OFF	24

2. ERROR DISPLAY METHOD

Outdoor LED Blink (1 to 18 times) 0.5sec ON / 0.5sec OFF blinking



3. NORMAL OPERATION DISPLAY

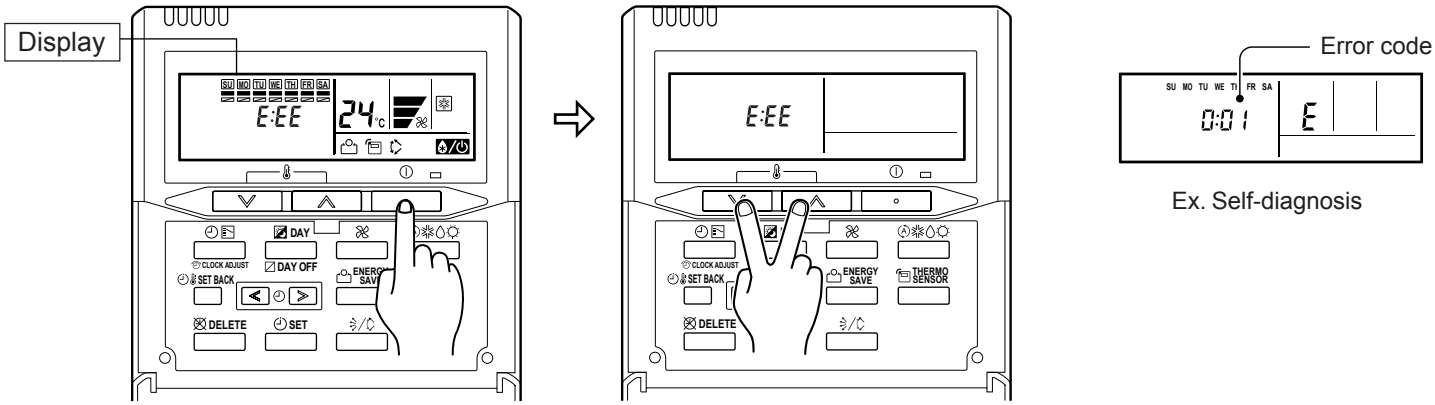
Operation	LED A	LED B	LED C	LED D
Normal operation	Continuously lighting	OFF	OFF	OFF
Protected operation	5sec ON / 1sec OFF			

2-1-3 WIRED REMOTE CONTROLLER DISPLAY (For AR*9L - 22L)

1. SELF - DIAGNOSIS

When the error indication "E:EE" is displayed, inspection of the air conditioning system is necessary. Please consult authoilzed servise personnel.

Run [Self-Diagnosis] if [E:EE] flashes on the clock display of the remote controller.



1. Stop the air conditioner operation.
2. Press the SET TEMPERATURE buttons ⋁ and ⋀ simultaneously for 5 seconds or more to start the self-diagnosis.
3. Press the SET TEMPERATURE buttons ⋁ and ⋀ simultaneously for 5 seconds or more or there is no key input for 20 seconds to stop the self-diagnosis.

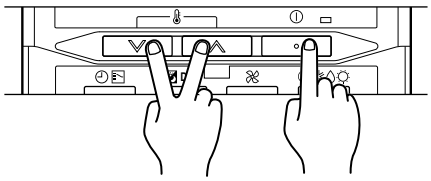
Error code	Error contents	Trouble shooting
00	Communication error (indoor unit ← remote control)	1
01	Communication error (Serial reverse transfer error)	2
02	Room temperature thermistor open	3
03	Room temperature thermistor short-circuited	
04	Indoor heat exchanger temperature thermistor open	4
05	Indoor heat exchanger temperature thermistor short-circuited	
06	Outdoor heat exchanger temperature thermistor error	5
07	Outdoor heat exchanger temperature thermistor short-circuited	
08	Power supply frequency detection error	26
09	Outdoor temperature thermistor open	7
0b	Outdoor temperature thermistor short-circuited	
0C	Outdoor discharge pipe temperature thermistor open	8
0d	Outdoor discharge pipe temperature thermistor short-circuited	
0E	Heat sink temperature thermistor error	19
11	Indoor EEPROM abnormal (Model No.)	9
12	Indoor fan motor abnormal	10
13	Outdoor communication signal error (Forward transfer signal error)	11
15	Compressor temperature thermistor error	12
16	Pressure switch error	13
17	IPM error	14
18	CT error	15
19	Active Filter Module (AFM) error	16
1A	Compressor rotor location cannot detect	17
1b	Outdoor unit fan motor error	18
1C	Main CPU - sub CPU communication error	24
1d	2-way valve temperature thermistor error	21
1E	3-way valve temperature thermistor error	22
1F	Connected indoor unit error	23

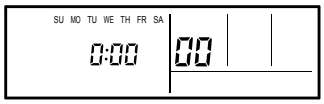
2. ERROR CODE HISTORY DISPLAY

Up to 16 memorized error codes may be displayed for the indoor unit connected to the remote controller.

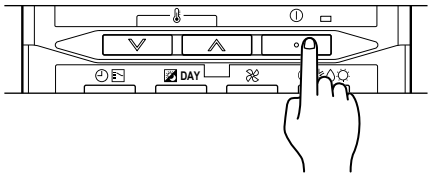
1. Stop the air conditioner operation.

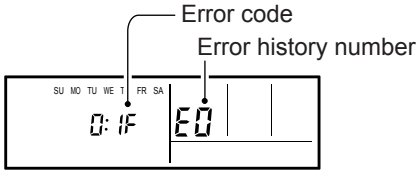
2. Press the SET TEMPERATURE buttons ⋁, ⋀ and the START/STOP button ⏻ simultaneously for 5 seconds or more to start the self-diagnosis.



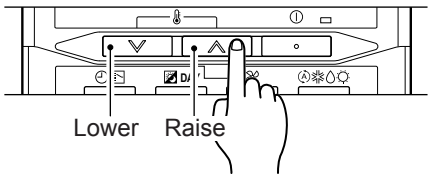


3. Press the START/STOP button.





4. Press the SET TEMPERATURE button to select the error history number.



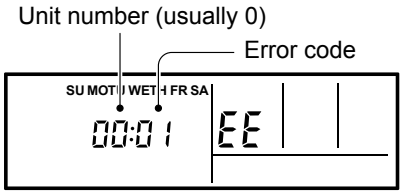
0 ↔ 1 ↔ 2 ↔ 3 ↔ 4 ↔ 5 ↔ 6 ↔ 7
F ↔ E ↔ d ↔ c ↔ b ↔ A ↔ 9 ↔ 8

5. Press the SET TEMPERATURE buttons ⋁, ⋀ and START/STOP button ⏻ simultaneously for 5 seconds or more or there is no key input for 20 seconds to stop the display.

2-1-4 WIRED REMOTE CONTROLLER DISPLAY (For AR*F09 - 22L)

1. SELF - DIAGNOSIS

When "EE" in Temperature Display is displayed, inspection of the air conditioning system is necessary. Please consult authoilzed servise personnel.



ex. Self-diagnosis check

Error code	Error contents	Trouble shooting
00	Communication error (indoor unit ← remote control)	1
01	Communication error (Serial reverse transfer error)	2
02	Room temperature sensor error	3
04	Indoor heat exchanger temperature sensor error	4
05	Outdoor heat exchanger temperature sensor(outlet) error	5
09	Water drain abnormal	6
08	Outdoor temperature sensor error	7
0C	Outdoor discharge pipe temperature sensor error	8
0F	Discharge temperature error	30
12	Indoor fan motor abnormal	10
13	Outdoor communication signal error (Forward transfer signal error)	11
15	Compressor temperature sensor error	12
16	Pressure switch error	13
17	IPM error	14
18	CT error	15
19	Compressor rotor location cannot detect (permanent stop)	17
1b	Outdoor unit fan motor error	18
1d	2-way valve temperature thermistor error	21
1E	3-way valve temperature thermistor error	22
1F	Main CPU - sub CPU communication error	24
1F	Connected indoor unit error	23
20	Indoor manual auto switch error	25
24	Exessive high pressure protection on cooling	31
26	Communication error (Main PCB → Display PCB)	27
27	Communication error (Main PCB ← Display PCB)	28
2c	4-way valve error	32

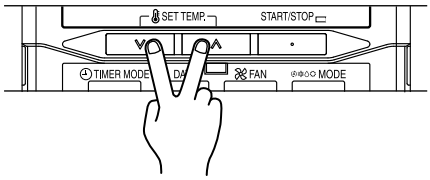
- If “CO” appears in the unit number display, there is a remote controller error. Refer to the installation instruction sheet included with the remote controller.

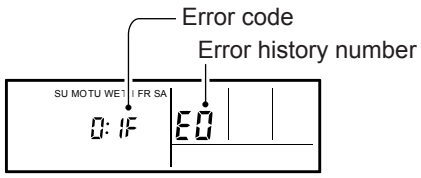
2. ERROR CODE HISTORY DISPLAY

Up to 16 memorized error codes may be displayed for the indoor unit connected to the remote controller.

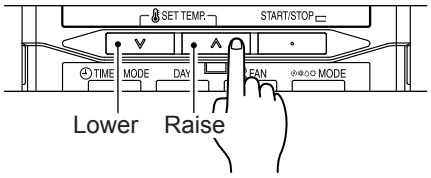
1. Stop the air conditioner operation.

2. Press the SET TEMPERATURE buttons ⋁, ⋀ simultaneously for 3 seconds or more to start the self-diagnosis.





3. Press the SET TEMPERATURE button to select the error history number.



0 ↔ 1 ↔ 2 ↔ 3 ↔ 4 ↔ 5 ↔ 6 ↔ 7 ↔
F ↔ E ↔ d ↔ c ↔ b ↔ A ↔ 9 ↔ 8 ↔

4. Press the SET TEMPERATURE buttons ⋁, ⋀ simultaneously for 3 seconds or more or there is no key input for 60 seconds to stop the display.

2-2 TROUBLE SHOOTING WITH ERROR CODE

Trouble shooting 1 **INDOOR UNIT Error Method:** **Communication Error** **(Indoor unit ← Remote control)**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor unit controller PCB circuit Wired Remote Control	When the indoor unit cannot receive the signal from Wired Remote more than 10seconds after power ON, or the indoor unit cannot receive the signal more than 1minute during normal operation.

Forecast of Cause:

1. Terminal connection abnormal 2. Wired Remote Control failure 3. Controller PCB failure

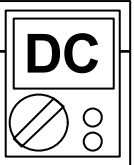
Check Point 1 : Check the connection of terminal

After turning off the power, check & correct the followings.

- Check the connection of terminal between remote control and Indoor unit, and check if there is a disconnection of the cable.

OK

Check Point 2 : Check Remote Control and Controller PCB



- Check Voltage at CN17 of Controller PCB. (Power supply to Remote Control)
  >> If it is DC12V, Remote Control is failure. (Controller PCB is normal) >> Replace Remote Control
  >> If it is DC 0V, Controller PCB is failure. (Check Remote Control once again) >> Replace Controller PCB

▶ **Upon correcting the removed connector or mis-wiring, reset the power.**

Trouble shooting 2 **OUTDOOR UNIT Error Method:** **Communication Error** **(Serial Reverse Transfer Error)**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Active Filter Module	When the indoor unit cannot receive the serial signal from Outdoor unit more than 10seconds.

Forecast of Cause:

1. Connection failure 2. External cause 3. Main PCB failure 4. Active Filter Module failure

Check Point 1-1 : Reset the power and operate

- Does Error indication show again?

NO → **Check Point 1-2: Check external cause such as noise**

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

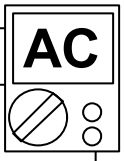
YES

Check Point 2 : Check Connection

- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  >> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.
- Check connection between Outdoor Unit Main PCB and Filter PCB.
  (If there is loose connector or open cable)

OK

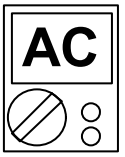
Check Point 3 : Check the voltage of power supply



- Check the voltage of power supply
  >> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.

OK

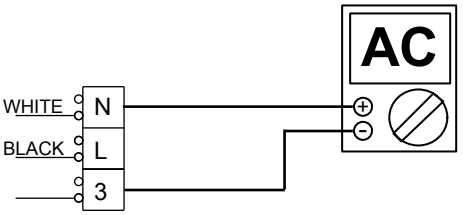
Check Point 4 : Check Serial Signal (Reverse Transfer Signal)



- Check Serial Signal (Reverse Transfer Signal)
  >> Check if Indicated value swings between AC70V and AC130V at Outdoor Unit Terminal N - 3.

[For AO*30LMAW4]
>> If it is abnormal, Check Active Filter Module (PARTS INFORMATION 3) and Outdoor unit fan motor (PARTS INFORMATION 8).
>> If Active Filter Module is abnormal, replace it.
>> If Outdoor unit fan motor is abnormal, replace Outdoor unit fan motor and Main PCB.
>> If Active Filter Module and Outdoor unit fan motor is normal, replace Main PCB.

[For AO*18LMAK2, AO*24LMAM2]
>> If it is abnormal, Check Active Filter Module (PARTS INFORMATION 3).
>> If Active Filter Module is abnormal, replace it.
>> If Active Filter Module and Outdoor unit fan motor is normal, replace Main PCB.



Trouble shooting 3 **INDOOR UNIT Error Method:** **Room Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Room Temperature Thermistor	When Room Temperature Thermistor open or short-circuit is detected at power ON.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Controller PCB failure

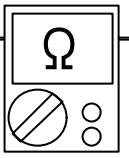
Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

Temperature	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C
Resistance Value (kΩ)	33.6	25.9	20.2	15.8	12.5	10.0	8.04	6.51

Temperature	40°C	45°C	50°C
Resistance Value (kΩ)	5.30	4.35	3.59

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Controller PCB (DC5.0V)

Make sure circuit diagram of indoor unit and check terminal voltage at Thermistor (DC5.0V)

▶ **If the voltage does not appear, replace Controller PCB.**

Trouble shooting 4 **INDOOR UNIT Error Method:** **Indoor Heat Exchanger Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**
Detective Actuators: Indoor Unit Controller PCB Circuit Heat Exchanger Temperature Thermistor	**Detective details:** When Heat Exchanger Temperature Thermistor open or short-circuit is detected at power ON.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Controller PCB failure

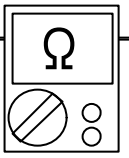
Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

Temperature	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C
Resistance Value (kΩ)	176	134	103	80.3	62.9	49.7	39.6	31.7

Temperature	40°C	45°C	50°C
Resistance Value (kΩ)	25.6	20.8	17.1

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Controller PCB (DC5.0V)

Make sure circuit diagram of indoor unit and check terminal voltage at Thermistor (DC5.0V)

▶ **If the voltage does not appear, replace Controller PCB.**

Trouble shooting 5 **OUTDOOR UNIT Error Method:** **Outdoor Heat Exchanger Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Heat Exchanger Temperature Thermistor	When Heat Exchanger Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

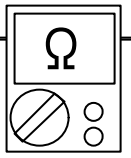
Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



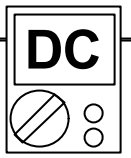
Thermistor Characteristics (Approx. value)

Temperature	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C
Resistance Value (kΩ)	27.8	21.0	16.1	12.4	9.63	7.56	5.98	4.77	3.84

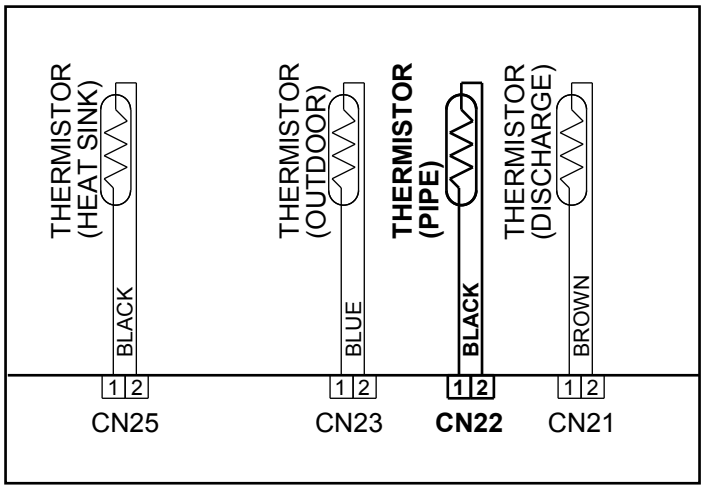
▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)



Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

Trouble shooting 6 **INDOOR UNIT Error Method:** **Water Drain Abnormal**	**Indicate or Display:** **Refer to error code table.**

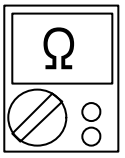
Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Float Switch	When Float Switch is ON for more than 3 minutes.

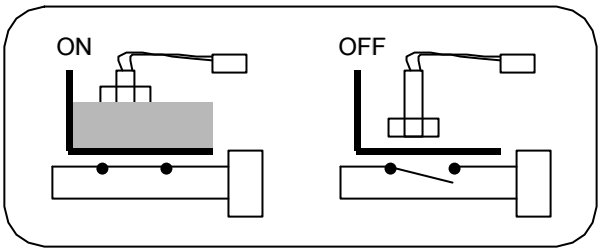
Forecast of Cause :

1. Float Switch failure 2. Shorted connector/ wire 3. Controller PCB failure

Check Point 1 : Check Float Switch

- Check operation of float switch. (any blocking by dust, etc.)
- Remove Float switch and check ON/OFF switching operation by using a meter.
  >>If Float switch is detective, replace it.





OK

Check Point 2 : Check Connector (CN15) / Wire

- Check loose contact of CN15 /shorted wire (pinched wire).
  >>Replace Float switch if the wire is abnormal

OK

Check Point 3 : Replace Controller PCB

▶ **If Check Point 1 & 2 do not improve the symptom, change Controller PCB.**

Trouble shooting 7 **OUTDOOR UNIT Error Method:** **Outdoor Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Outdoor Temperature Thermistor	When Outdoor Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

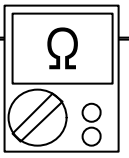
Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

Temperature	-20°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C
Resistance Value (kΩ)	115	62.3	46.6	35.2	26.9	20.7	16.1	12.6

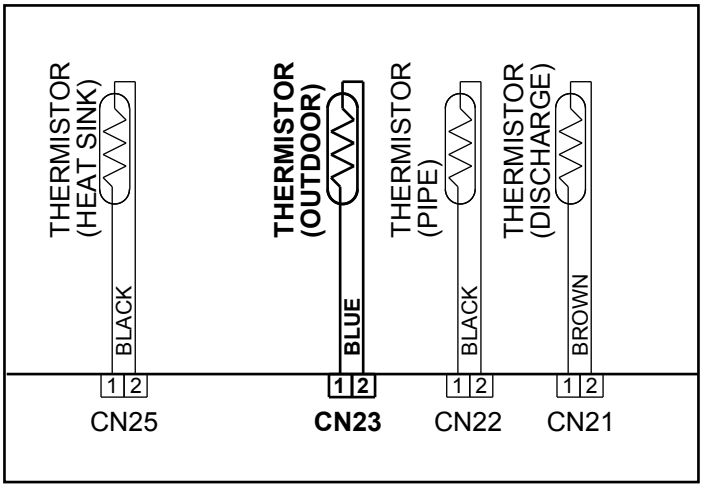
Temperature	30°C	40°C	50°C	60°C	70°C
Resistance Value (kΩ)	7.97	5.18	3.45	2.36	1.65

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

Trouble shooting 8 **OUTDOOR UNIT Error Method:** **Outdoor Discharge Pipe Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Discharge Pipe Temperature Thermistor	When Discharge Pipe Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

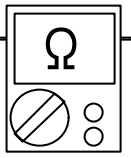
Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

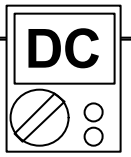
Temperature	0°C	5°C	10°C	15°C	20°C	30°C	40°C	50°C	60°C
Resistance Value (kΩ)	169	130	101	79.1	62.5	40.0	26.3	17.8	12.3

Temperature	70°C	80°C	90°C	100°C	120°C	140°C	160°C	180°C
Resistance Value (kΩ)	8.69	6.27	4.60	3.43	2.00	1.22	0.79	0.52

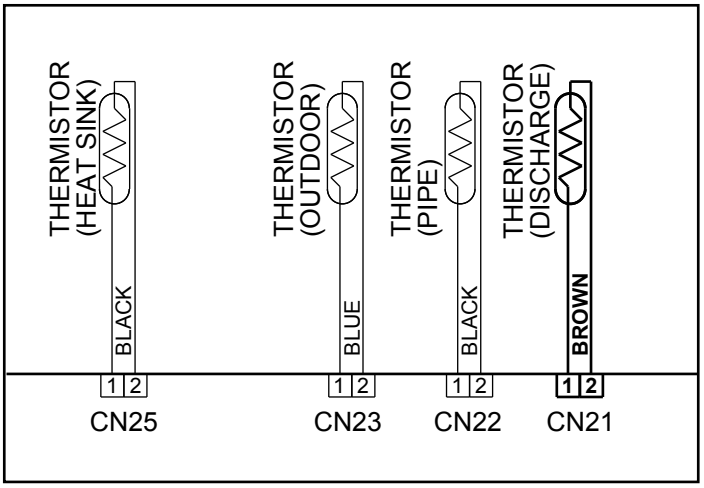
▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)



Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

Trouble shooting 9 **INDOOR UNIT Error Method:** **Indoor EEPROM abnormal (Model No.)**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB circuit	When the model information being read from EEPROM has an apparent error.

Forecast of Cause:

1. External cause 2. Defective connection of electric components 3. Controller PCB failure

Check Point 1-1 : Reset Power Supply and operate

- Does Error indication show again?

NO → Check Point 1-2 :
Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line.(Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

YES → Check Point 2 :
Check Indoor Unit electric components

- Check all connectors. (loose connector or incorrect wiring)
- Check any shortage or corrosion on PCB.

→ Check Point 3 : Replace Controller PCB

▶ **Change Controller PCB.**

Note : EEPROM

EEPROM(Electronically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if power is turned off. It can change the contents electronically.
To change the contents, it uses higher voltage than normal, and it can not change a partial contents. (Rewriting shall be done upon erasing the all contents.)
There is a limit in a number of rewriting.

Trouble shooting 10 **INDOOR UNIT Error Method:** **Indoor Fan Motor abnormal**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Indoor Fan Motor	When the condition that actual frequency of Indoor Fan is below 1/3 of target frequency is continued more than 56 seconds. Or the condition of fan speed is 0rpm is continued more than 56 seconds.

Forecast of Cause:

1. Fan rotation failure 2. Motor protection by surrounding temperature rise 3. Control PCB failure

Check Point 1 : Check rotation of Fan

- Rotate the fan by hand when operation is off.
  (Check if fan is caught, dropped off or locked motor)
  >>If Fan or Bearing is abnormal, replace it.

OK

Check Point 2 : Check ambient temp. around motor

- Check excessively high temperature around the motor.
  (If there is any surrounding equipment that causes heat)
  >>Upon the temperature coming down, restart operation.

OK

Check Point 3 : Replace Controller PCB

▶ **If Check Point 1,2 do not improve the symptom, change Controller PCB.**

Trouble shooting 11 **INDOOR UNIT Error Method:** **Outdoor Communication Signal Error (Forward Transfer Signal Error)**	**Indicate or Display:** **Refer to error code table.**
Detective Actuators: Indoor Unit Controller PCB Circuit	**Detective details:** When the outdoor unit cannot receive the serial signal from Indoor unit more than 10seconds.

Forecast of Cause:

1. Connection failure 2. External cause 3. Controller PCB failure

Check Point 1-1 : Reset the power

- Does Error indication reappear?

NO → Check Point 1-2: Check external cause such as noise

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

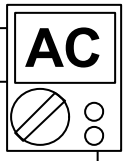
YES

Check Point 2 : Check Connection

- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  >> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.
- Check connection between Indoor Unit Controller PCB and Filter PCB.
  (If there is loose connector or open cable)

OK

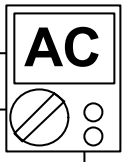
Check Point 3 : Check the voltage of power supply



- Check the voltage of power supply
  >> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.

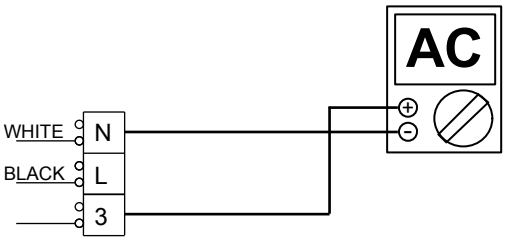
OK

Check Point 4 : Check Serial Signal (Forward Transfer Signal)



- Check Serial Signal (Forward Transfer Signal)
  >> Check if Indicated value swings between AC70V and AC130V at Outdoor Unit Terminal N - 3.
  >> If it is abnormal, Controller PCB is failure. >> Replace Controller PCB

[For AB*F, AR*F, AU*F, AS*A, AG*F type]
>> If it is abnormal, Check Indoor unit fan motor. (PARTS INFORMATION 7)
>> If Indoor unit fan motor is abnormal, replace Indoor unit fan motor and Controller PCB.
>> If it is abnormal, replace Outdoor unit Main PCB.



· **For AO*30LMAW4**

Trouble shooting 12 **OUTDOOR UNIT Error Method:** **Compressor Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Compressor Temperature Thermistor	When Compressor Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor.

Forecast of Cause :

1. Connector connection failure 2. Thermistor failure 3. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Rough value)

Temperature	0°C	5°C	10°C	15°C	20°C	30°C	40°C	50°C	60°C
Resistance Value (kΩ)	169	130	101	79.1	62.5	40.0	26.3	17.8	12.3

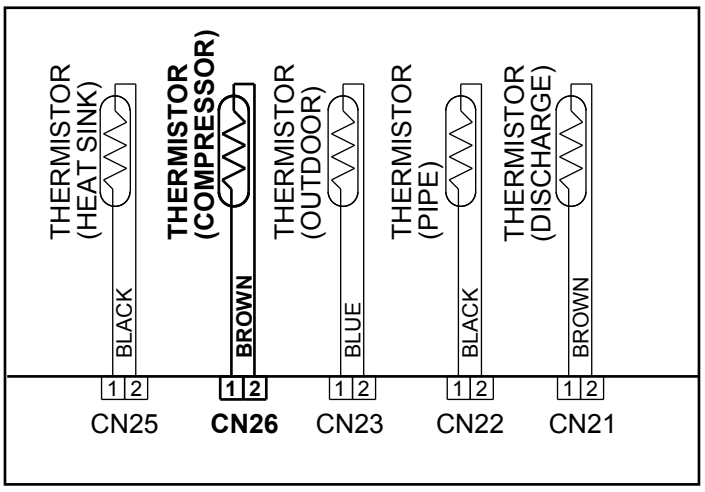
Temperature	70°C	80°C	90°C	100°C	120°C	140°C	160°C	180°C
Resistance Value (kΩ)	8.69	6.27	4.60	3.43	2.00	1.22	0.79	0.52

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

Trouble shooting 13 **OUTDOOR UNIT Error Method:** **Pressure Switch Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators: Outdoor Unit Main PCB Circuit Pressure Switch	**Detective details:** When pressure switch open is detected in 10 seconds after the power is turned on.

Forecast of Cause :

1. Connector connection failure 2. Pressure Switch failure 3. Main PCB failure

Check Point 1 : Reset Power Supply and operate

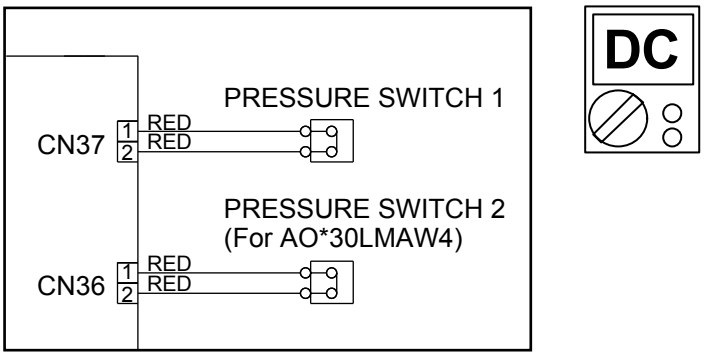
- Does abnormal LED indication show again?

NO → **Check Point 3 : Check Pressure Switch**

YES

Check Point 2 : Check voltage of Main PCB (DC5.0V)

- Make sure circuit diagram of outdoor unit and check terminal voltage at Pressure Switch. (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

OK

Check Point 3 : Check Pressure Switch

- Check if connector is loose or cable is open.
  >> If no abnormal connection is found, replace Pressure Switch.

▶ **After replacing Pressure Switch, check operating condition and pressure in operation.**

Trouble shooting 14 **OUTDOOR UNIT Error Method:** **IPM error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Compressor	① When more than normal operating current to IPM in Main PCB flows, the compressor stops. ② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again. ③ If ① and ② repeats 5 times, the compressor stops permanently.

Forecast of Cause :

1. Defective connection of electric components
2. Outdoor Fan Operation failure
3. Outdoor Heat Exchanger clogged
4. Compressor failure
5. Main PCB failure

Check Point 1 : Check connections of Outdoor Unit Electrical Components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Check Outdoor Fan, Heat Exchanger

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating by hand when operation is off ?

>> If the Fan Motor is locked, replace it.

- Check Outdoor Fan Motor. (Refer to Trouble shooting 18)

>> If the Fan Motor is failure, replace it.

OK

Check Point 3 : Check Compressor

- Check Compressor. **(PARTS INFORMATION 2)**

OK

Check Point 4 : Replace Main PCB

▶ **If Check Point 1, 2, 3 do not improve the symptom, change Main PCB.**

Trouble shooting 15 **OUTDOOR UNIT Error Method:** CT error	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Outdoor Unit Filter PCB Circuit (Input current sensor unit)	When Input Current Sensor has detected lower than 0.5A while Inverter Compressor is operating at higher than 56Hz, after 1minute upon starting the Compressor. (Except during the defrost operation)

Forecast of Cause :

1. Defective connection of electric components 2. External cause 3. Filter PCB failure 4. Main PCB failure

Check Point 1-1 : Reset Power Supply and operate

- Does Error indication show again?

NO → Check Point 1-2 :
Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line.(Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

YES → Check Point 2 :
Check connections of Outdoor Unit Electrical Components

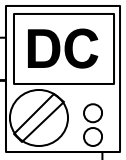
- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

AO*18L/ 24L

Check Point 3 : Check Filter PCB and Main PCB



- Check DC voltage of CN1 (between 2 (Brown) and 3 (Red)) on Filter PCB.

>> After 40seconds upon starting the Compressor,
If it is higher than 0.2V, Main PCB is failure. (Filter PCB is normal) >> Replace Main PCB
>> If it is lower than 0.2V, Filter PCB is failure. >> Replace Filter PCB

▶ **If it does not improve the symptom, change Main PCB.**

Check Point 4 : Replace Main PCB

▶ **If Check Point 1, 2 do not improve the symptom, change Main PCB.**

Trouble shooting 16 **OUTDOOR UNIT Error Method:** **Active Filter Module (AFM) error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Active Filter Module	When inverter input DC voltage is higher than 467V or lower than 237V. When a momentary power cut off occurred on low voltage.

Forecast of Cause :

1. External cause 2. Connector connection failure 3. Active Filter Module failure 4 . Main PCB failure

Check Point 1 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

OK

Check Point 2 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 3 : Check Active Filter Module

- Check Active Filter Module. **(PARTS INFORMATION 3)**

>>If Active Filter Module is abnormal, replace it.

OK

Check Point 4 : Replace Main PCB

▶ **If Check Point 1, 2 do not improve the symptom, change Main PCB.**

Trouble shooting 17 **OUTDOOR UNIT Error Method:** **Compressor rotor location cannot detect (Permanent Stop)**	**Indicate or Display:** **Refer to error code table.**
Detective Actuators: Outdoor Unit Main PCB Circuit	**Detective details:** ① While running the compressor, if the detected rotor location is out of phase with actual rotor location more than 90 degrees, the compressor stops. ② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again. ③ If ① and ② repeats 5 times, the compressor stops permanently.

Forecast of Cause :

1. Defective connection of electric components 2. Main PCB failure

Check Point 1 : Check connection of around the Compressor components

For Compressor Terminal, Main PCB

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.
  (Refer to PARTS INFORMATION 2)

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Replace Main PCB

▶ **If Check Point 1 do not improve the symptom, change Main PCB.**

· **For AO*30LMAW4**

Trouble shooting 18 **OUTDOOR UNIT Error Method:** **Outdoor Unit Fan Motor Error**	**Indicate or Display:** **Refer to error code table.**
Detective Actuators: Outdoor Unit Main PCB Circuit Outdoor Fan Motor	**Detective details:** ① When outdoor fan rotation speed is less than 100rpm in 20 seconds after fan motor starts, fan motor stops. ② After fan motor restarts, if the same operation within 60sec is repeated 3 times in a row, compressor and fan motor stops. ③ If ① and ② repeats 5 times in a row, compressor and fan motor stops permanently.

Forecast of Cause:

1. Fan rotation failure 2. Motor protection by surrounding temperature rise 3. Main PCB failure

Check Point 1 : Check rotation of Fan

· Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
>>If Fan or Bearing is abnormal, replace it.

OK

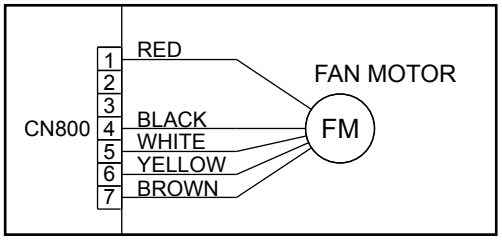
Check Point 2 : Check ambient temp. around motor

· Check excessively high temperature around the motor.
(If there is any surrounding equipment that causes heat)
>>Upon the temperature coming down, restart operation.

OK

Check Point 3 : Check Output Voltage of Main PCB

· Check outdoor unit circuit diagram and the voltage.
(Measure at Main PCB side connector)



Read wire	DC voltage
Red - Black	300～400V
White - Black	15±1.5V

▶ **If the voltage is not correct, replace Main PCB.**

Trouble shooting 19 **OUTDOOR UNIT Error Method:** **Heat Sink Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Heat Sink Temperature Thermistor	When Heat Sink Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Approx. value)

Temperature		0°C	5°C	10°C	15°C	20°C	30°C	40°C	50°C
Resistance Value (kΩ)	AO*18L/ 24L	169	130	101	79.1	62.5	40.0	26.3	17.8
	AO*30L	16.1	12.4	9.73	7.67	6.10	3.95	2.62	1.79

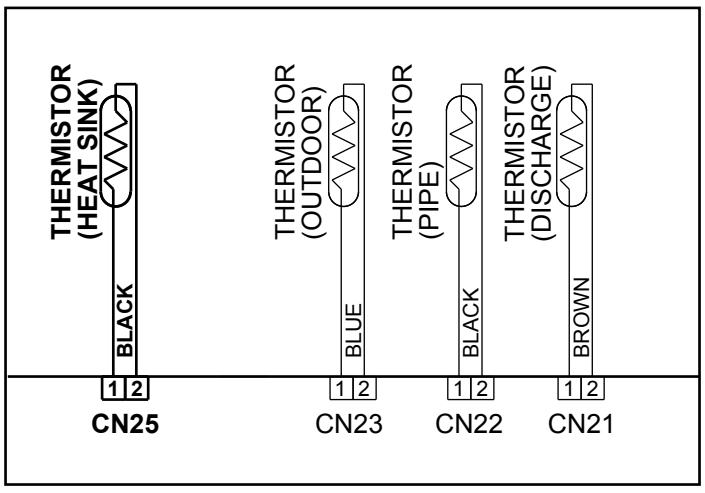
Temperature		60°C	70°C	80°C	90°C	100°C	120°C
Resistance Value (kΩ)	AO*18L/ 24L	12.3	8.69	6.27	4.60	3.43	2.00
	AO*30L	1.25	0.89	0.65	0.48	0.36	0.21

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

Trouble shooting 20 **OUTDOOR UNIT Error Method:** **Compressor Start-up error (Permanent Stop)**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit	① On start-up the compressor, when detected rotor position is out of phase with actual rotor position more than 90 degrees,the compressor stops. ② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again. ③ If ① and ② repeats 5 times, the compressor stops permanently.

Forecast of Cause :

1. Defective connection of electric components 2. Main PCB failure

Check Point 1 : Check connection of around the Compressor components

For Compressor Terminal, Main PCB

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.
  (Refer to PARTS INFORMATION 2)

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Replace Main PCB

▶ **If Check Point 1 do not improve the symptom, replace Main PCB.**

Trouble shooting 21 **OUTDOOR UNIT Error Method:** **2-way valve Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit 2-way valve Temperature Thermistor	When 2-way valve Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

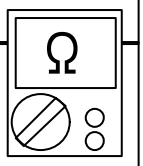
Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value



Thermistor Characteristics (Approx. value)

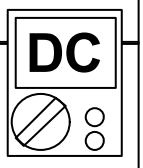
Temperature	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	30°C
Resistance Value (kΩ)	312	233	176	134	103	80.3	62.9	39.6

Temperature	40°C	50°C	60°C	70°C	80°C	90°C	100°C
Resistance Value (kΩ)	25.6	17.1	11.6	8.12	5.78	4.19	3.09

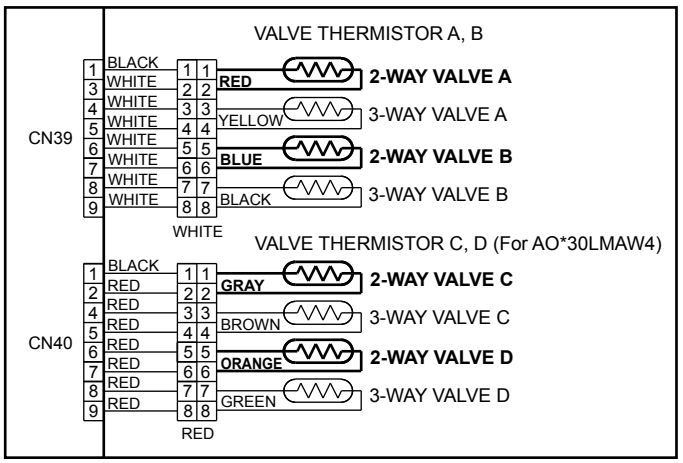
▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)



Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

Trouble shooting 22 **OUTDOOR UNIT Error Method:** **3-way valve Temperature Thermistor Error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit 3-way valve Temperature Thermistor	When 3-way valve Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor.

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Approx. value)

Temperature	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	30°C
Resistance Value (kΩ)	312	233	176	134	103	80.3	62.9	39.6

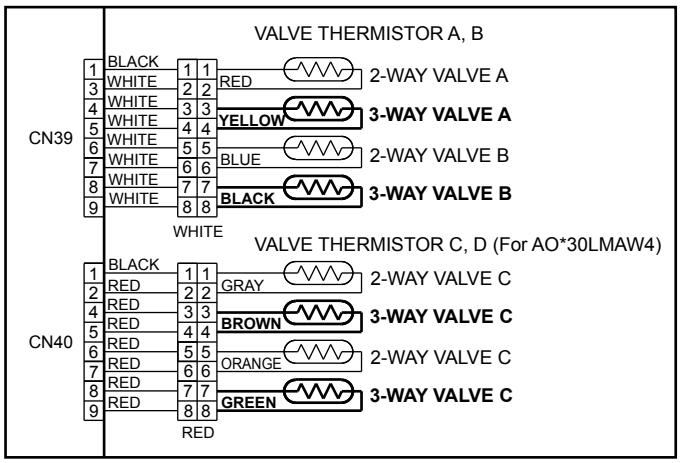
Temperature	40°C	50°C	60°C	70°C	80°C	90°C	100°C
Resistance Value (kΩ)	25.6	17.1	11.6	8.12	5.78	4.19	3.09

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)



▶ **If the voltage does not appear, replace Main PCB.**

Trouble shooting 23 **OUTDOOR UNIT Error Method:** **Connected Indoor unit error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit	When the total capacity of the connected indoor units exceed the connectable range of the total capacity.

Forecast of Cause :

1. The selection of connected indoor unit is incorrect 2.Main PCB failure

Check Point 1 : Check the total capacity of indoor unit

- Check the total capacity of the connected indoor units.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

OK

Check Point 2 : Replace Main PCB

▶ **If Check Point 1 do not improve the symptom, change Main PCB.**

Trouble shooting 24 **OUTDOOR UNIT Error Method:** **Main CPU - Sub CPU communication error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit	When it cannot receive an effective signal for 10sec between the Main CPU and Sub CPU in outdoor unit.

Forecast of Cause :

1. Main PCB failure

Check Point 1 : Replace Main PCB

▶ **Change Main PCB.**

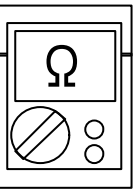
Trouble shooting 25 **INDOOR UNIT Error Method:** **Forced auto switch error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Forced auto switch	When the Forced auto switch becomes ON for 10 consecutive seconds. ▪ For AB*F/ AU*F/ AG*F When the Forced auto switch becomes ON for 30 consecutive seconds.

Forecast of Cause :

1. Forced auto switch failure 2.Controller PCB failure

Check Point 1 : Check the Forced auto switch



- Check if Forced auto switch is kept pressed.
- Check ON/OFF switching operation by using a meter.

>>If Forced auto switch is detective, replace it.

OK

Check Point 2 : Replace Controller PCB

▶ **If Check Point 1 do not improve the symptom, change Controller PCB.**

Trouble shooting 26 **INDOOR UNIT Error Method:** **Power supply frequency detection error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit	The power supply frequency cannot be recognized after 4sec of power ON.

Forecast of Cause :

1. Connection failure 2. External cause 3. Controller PCB failure

Check Point 1-1 : Reset the power and operate

- Does Error indication show again?

NO

YES

Check Point 2 : Check Connection

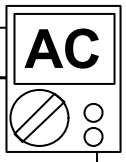
- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  >> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.
- Check connection between Outdoor Unit Main PCB and Filter PCB.
  (If there is loose connector or open cable)

Check Point 1-2:
Check external cause such as noise

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

OK

Check Point 3 : Check the voltage of power supply



- Check the voltage of power supply
  >> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.

OK

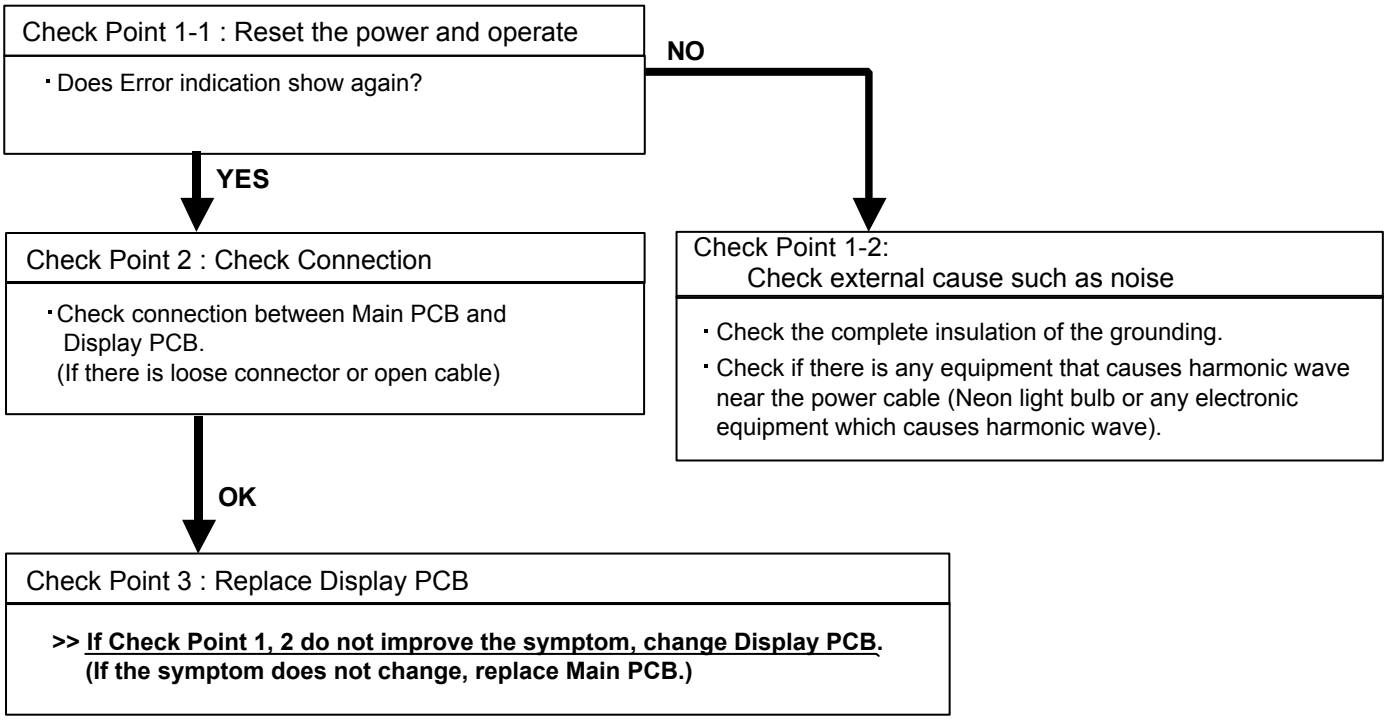
Check Point 4 : Replace Controller PCB

▶ **If Check Point 1～3 do not improve the symptom, change Controller PCB.**

Trouble shooting 27 **INDOOR UNIT Error Method:** **Communication Error** **(Main PCB ---> Display PCB)**	**Indicate or Display:** **Refer to error code table.**
Detective Actuators: Indoor Unit Main PCB Circuit Display PCB	**Detective details:** When the Display PCB cannot receive the signal from the Main PCB.

Forecast of Cause:

1. Connection failure 2. External cause 3. Display PCB failure 4. Main PCB failure



Trouble shooting 28 **OUTDOOR UNIT Error Method:** **Communication Error** **(Main PCB <--- Display PCB)**	**Indicate or Display:** **Refer to error code table.**
Detective Actuators: Indoor Unit Main PCB Circuit Display PCB	**Detective details:** When the Main PCB cannot receive the signal from the Display PCB.

Forecast of Cause:

1. Connection failure 2. External cause 3. Display PCB failure 4. Main PCB failure

Check Point 1-1 : Reset the power and operate

- Does Error indication show again?

NO → **Check Point 1-2: Check external cause such as noise**

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

YES → **Check Point 2 : Check Connection**

- Check connection between Main PCB and Display PCB.
  (If there is loose connector or open cable)

OK → **Check Point 3 : Replace Display PCB**

>> If Check Point 1, 2 do not improve the symptom, change Display PCB.
(If the symptom does not change, replace Main PCB.)

Trouble shooting 30 **OUTDOOR UNIT Error Method:** **Discharge temperature error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Outdoor Unit Main PCB Circuit Discharge Pipe Temperature Thermistor	When the discharge temperature becomes higher than 110°C, the compressor stops.

Forecast of Cause :

1. Valve is close 2. EEV failure 3. Gas Leak, less 4. Discharge Thermistor failure
5. Outdoor Fan Operation failure 6. Outdoor Heat Exchanger clogged

< Cooling mode >

Check Point 1 : Check if Gas Valve is open

- If it is not open, open it and check the operation.

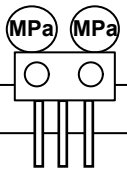
OK

Check Point 2 : Check EEV and Strainer

- Are EEV and Strainer open?
  (Refer to PARTS INFORMATION 4)

>>If EEV or Strainer is defective, replace it.

OK



Check Point 3 : Check if gas leak or less gas

- Measure Gas pressure, if there is a leak, correct it.

>>If recharging refrigerant, make sure to perform vacuuming and recharge the specified amount.

OK

Check Point 4 : Check Discharge Thermistor

- Isn't it fallen off the holder?
- Is there a cable pinched?

>> Check characteristics of thermistor (Refer to Trouble shooting 8), If defective, replace the thermistor

OK

Check Point 5 : Check Outdoor FAN, Heat Exchanger

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating? (Check by hand and if it is locked, replace the motor)
- Check Outdoor Fan Motor.

>>If the Fan Motor is defective, replace it.

< Heating mode >

Check Point 1 : Check if Llquid Valve is open

- If it is not open, open it and check the operation.

OK

Check Point 2 : Check EEV and Strainer

- Are EEV and Strainer open?
  (Refer to PARTS INFORMATION 4)

>>If EEV or Strainer is defective, replace it.

OK

Trouble shooting 32 **OUTDOOR UNIT Error Method:** **4-way valve error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Heat Exchanger Temperature Thermistor Room Temperature Thermistor 4-way valve	When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops. ・Cooling or Dry operation [Indoor heat exchanger temp.] - [Room temp.] > 10degC ・Heating operation [indoor heat exchanger temp.] - [Room temp.] < -10degC If the same operation is repeated 5 times, the compressor stops permanently.

Forecast of Cause :

1. Connector connection failure 2. Thermistor failure 3. Coil failure 4. 4-way valve failure
5. Main PCB failure

Check Point 1 : Check connection of Connector

・Check if connector is removed.
・Check erroneous connection.
・Check if thermistor cable is open.
>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 2 : Check thermistor

・Isn't it fallen off the holder?
・Is there a cable pinched?

>> Check characteristics of thermistor,
If defective, replace the thermistor

OK

Check Point 3 : Check the solenoid coil and 4-way valve

[Solenoid coil]
・Remove CN30 from PCB and check the resistance value of coil.
Resistance value is about 1.4kΩ
>>If it is Open or abnormal resistance value, replace Solenoid Coil.

[4-way valve]
・Check each piping temperature,
and the location of the valve by the temperature difference.
>>If the value location is not proper, replace 4-way valve.

OK

Check Point 4 : Replace Main PCB

▶ **If Check Point 1- 3 do not improve the symptom, replace Main PCB.**

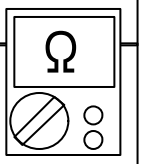
Trouble shooting 34 **INDOOR UNIT Error Method:** **VDD permanence stop protection (Electric air clean)**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Electric air clean unit Indoor Unit Controller PCB Circuit	When the air cleanness monitor trial protection operates 4 times.

Forecast of Cause :

1. Electric air clean unit failure 2. Controller PCB failure

Check Point 1 : Check the Electric air clean unit



- Check the front panel is closed.
- Check the Micro switch in Electric air clean unit.
  (Check ON/OFF switching operation by using a meter.)
  >>If Micro switch is detective, replace Electric air clean unit.

OK

Check Point 2 : Replace Controller PCB

▶ **If Check Point 1 do not improve the symptom, change Controller PCB.**

Trouble shooting 35 **INDOOR UNIT Error Method:** **Reverse-VDD permanence stop protection (Electric air clean power supply circuit abnormal)**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Electric air clean unit Indoor Unit Controller PCB Circuit	The air clean operation signal was detected for 1 minute at the time of air clean mode OFF.

Forecast of Cause :

1. Electric air clean unit failure 2. Controller PCB failure

Check Point 1 : Replace Electric air clean unit

▶ **Change Electric air clean unit.**

OK

Check Point 2 : Replace Controller PCB

▶ **If Check Point 1 do not improve the symptom, change Controller PCB.**

Trouble shooting 38 **OUTDOOR UNIT Error Method:** **Main relay welded error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators: Outdoor Unit Main PCB Circuit Main relay	**Detective details:** When the signal from the outdoor unit is input after 2min.20sec. from the time of operation stop under the Main relay is OFF condition.

Forecast of Cause :

1. Main relay 2. Main PCB failure

Check Point 1 : Replace Main PCB

▶ **Change Main PCB.**

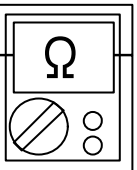
Trouble shooting 39 **INDOOR UNIT Error Method:** **Damper error** **(Upper & Lower air flow)** **(Upper air flow)**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB Circuit Limit switch Damper	When damper opening recovery operation repeats 6 times.

Forecast of Cause :

1. Limit switch failure
2. Shorted connector/ wire
3. Damper faulure
4. Controller PCB failure

Check Point 1 : Check Limit switch



- Check operation of limit switch. (any blocking by dust, etc.)
- Remove Limit switch and check ON/OFF switching operation by using a meter.

>>If Limit switch is detective, replace it.

OK

Check Point 2 : Check Connector (CN18) / Wire

- Check loose contact of CN18 /shorted wire (pinched wire).

>>Replace Limit switch if the wire is abnormal

OK

Check Point 3 : Check Damper

- Check the obstruction of damper movement.
- Check the damper movement.

>>Replace Damper if the damper is abnormal

OK

Check Point 4 : Replace Controller PCB

▶ If Check Point 1～3 do not improve the symptom, change Controller PCB.

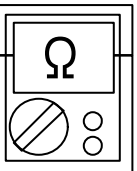
Trouble shooting 40 **INDOOR UNIT Error Method:** **Damper error**	**Indicate or Display:** **Refer to error code table.**

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB Circuit Limit switch	When close detecting sw and open detecting sw operates simultaneously.

Forecast of Cause :

1. Limit switch failure 2. Shorted connector/ wire 3. Controller PCB failure

Check Point 1 : Check Limit switch



- Check operation of limit switch. (any blocking by dust, etc.)
- Remove Limit switch and check ON/OFF switching operation by using a meter.

>>If Limit switch is detective, replace it.

OK

Check Point 2 : Check Connector (CN18) / Wire

- Check loose contact of CN18 /shorted wire (pinched wire).

>>Replace Limit switch if the wire is abnormal

OK

Check Point 3 : Replace Controller PCB

▶ **If Check Point 1 & 2 do not improve the symptom, change Controller PCB.**

2-3 TROUBLE SHOOTING WITH NO ERROR CODE

Trouble shooting 41

Indoor Unit - No Power

Forecast of Cause:

1. Power Supply failure 2. External cause
3. Electrical Components defective

Check Point 1 : Check Installation Condition

- Isn't the breaker down?
- Check loose or removed connection cable.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

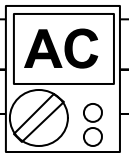
OK

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components



- Check Voltage of power supply.

>> Check AC198 - 264V appears at Indoor Unit Terminal L - N (Power Supply).

NO

YES

- Check Fuse (F101) in Filter PCB.

>> If Fuse is open, check if the wiring between Terminal and Filter PCB is loose, and replace Fuse.

- Check Varistor (VA101, VA102) in Filter PCB.

>> If Varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace Varistor.

OK

▶ If the symptom does not change by above Check3, replace Filter PCB.

Trouble shooting 42

Outdoor Unit - No Power

Forecast of Cause:

1. Power Supply failure 2. External cause
3. Electrical Components defective

Check Point 1 : Check Installation Condition

- Isn't the breaker down?
- Check loose or removed connection cable.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

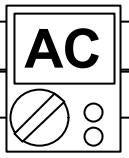
OK

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line.
  (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components



- Check the voltage of power supply.

>> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.

NO

YES

- Check Fuse (F2, F4) in Main PCB.

>> If Fuse is open, check loose terminal or removed connector (CN1) , and replace Fuse.

- Check Varistor in Main PCB (VA103).

>> If Varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace Varistor. Upon checking the normal power supply, replace Varistor.

YES

- Check Active Filter Module. **(PARTS INFORMATION 3)**

>>If Active Filter Module is abnormal, replace it.

OK

▶ **If the symptom does not change by above Check 3, replace Main PCB.**

Trouble shooting 43

No Operation (Power is ON)

Forecast of Cause:

1. Setting/ Connection failure 2. External cause
3. Electrical Component defective

Check Point 1 : Check indoor and outdoor installation condition

- Indoor Unit - Check incorrect wiring between Indoor Unit - Remote Control, or terminals between Indoor Units. Or, check if there is an open cable connection.
- Are these Indoor Unit, Outdoor Unit, and Remote Control suitable model numbers to connect?

>> If there is some abnormal condition, correct it by referring to Installation manual and Data & Technical Manual.

OK

Turn off Power and check/ correct followings.

- Is there loose or removed communication line of Indoor Unit and Outdoor Unit?

OK

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line.
  (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components at Indoor and Outdoor

- Check Voltage at CN17 of Controller PCB. (Power supply to Remote Control)

>> If it is DC12V, Remote Control is failure. (Controller PCB is normal) >> Replace Remote Control
>> If it is DC 0V, Controller PCB is failure. (Check Remote Control once again) >> Replace Controller PCB

>> If the symptom does not change by above Check 1, 2, 3, replace Main PCB of Outdoor unit.

Trouble shooting 44

No Cooling / No Heating

Forecast of Cause:

1. Indoor Unit error 2. Outdoor Unit error
3. Effect by Surrounding environment
4. Connection Pipe / Connection Wire failure 5. Refrigeration cycle failure

Check Point 1 : Check Indoor Unit

- Does Indoor Unit FAN run on HIGH FAN?
- Is Air Filter dirty?
- Is Heat Exchanger clogged?
- Check if Energy save function is operated.

OK

Check Point 2 : Check Outdoor Unit Operation

- Check if Outdoor Unit is operating
  (If not, refer to Trouble shooting 30)
- Check any objects that obstruct the air flow route.
- Check clogged Heat Exchanger.
- Is the Valve open?

OK

Check Point 3 : Check Site Condition

- Is capacity of Indoor Unit fitted to Room size?
- Any windows open? Or direct sunlight ?

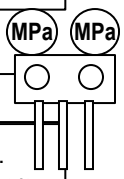
OK

Check Point 4 :
Check Indoor/ Outdoor Installation Condition

- Check connection pipe
  (specified pipe length & Pipe diameter?)
- Check any loose or removed communication line.

>> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.

OK



Check Point 5 : Check Refrigeration Cycle

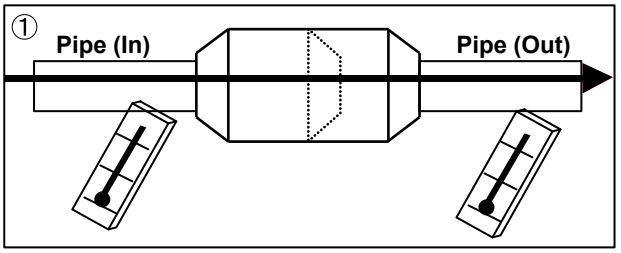
- Check if Strainer is clogged (Refer to the figure at right).
- Measure Gas Pressure and if there is a leakage, correct it.

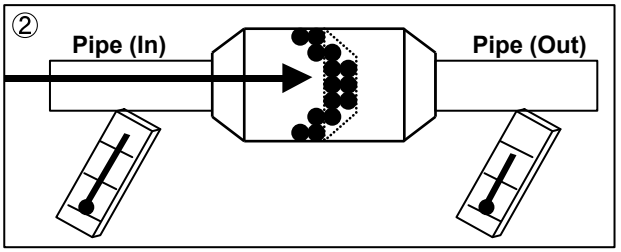
>> When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.

- Check EEV (PARTS INFORMATION 4)
- Check Compressor (PARTS INFORMATION 1,2)

Attention

Strainer normally does not have temperature difference between inlet and outlet as shown in ①, but if there is a difference like shown in ②, there is a possibility of inside clogged. In this case, replace Strainer.





Trouble shooting 45

Abnormal Noise

Forecast of Cause :

1. Abnormal installation(Indoor/ Outdoor) 2. Fan failure(Indoor/ Outdoor)
3. Compressor failure (Outdoor)

Diagnosis method when Abnormal Noise is occurred

- Abnormal noise is coming from Indoor Unit. (Check and correct followings)
  - Is Main Unit installed in stable condition?
  - Is the installation of Air suction grille and front panel normal?

OK

  - Is Fan broken or deformed?
  - Is the screw of Fan loose?
  - Is there any object which obstruct the Fan rotation?

- Abnormal noise is coming from Outdoor Unit. (Check and correct followings)
  - Is Main Unit installed in stable condition?
  - Is Fan Guard installed normally?

OK

  - Is Fan broken or deformed?
  - Is the screw of Fan loose?
  - Is there any object which obstruct the Fan rotation?

OK

  - Check if vibration noise by loose bolt or contact noise of piping is happening.

OK

  - Is Compressor locked?
    >> Check Compressor (PARTS INFORMATION 1,2)

Trouble shooting 46

Water Leaking

Forecast of Cause:

1. Erroneous installation 2. Drain hose failure 3. Float Switch failure

Diagnosis method when water leak occurs

- Is Main Unit installed in stable condition?
- Is Main Unit broken or deformed at the time of transportation or maintenance?

OK

- Is Drain Hose connection loose?
- Is there a trap in Drain Hose?
- Is Drain Hose clogged?

OK

- Is Fan rotating?
  >> Check Fan Motor (PARTS INFORMATION 5)

OK

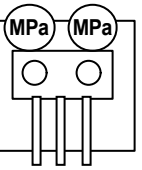
- Is Float Switch defective?
  >> Check Float Switch (Refer to Trouble Shooting 6)

Diagnosis method when water is spitting out.

- Is the filter clogged?

OK

- Check Gas Pressure and correct it if there was a gas leak.



2-4 SERVICE PARTS INFORMATION

SERVICE PARTS INFORMATION 1

Compressor

Diagnosis method of Compressor (If Outdoor Unit LED displays Error, refer to Trouble shooting)

Does not start up

- Is there open or loose connection cable?

- Check Filter PCB, Main PCB, connection of Compressor,and winding resistance. (Refer to the next page).

>> If there is no failure, the defect of Compressor is considered (Locked compressor due to clogged dirt or less oil)

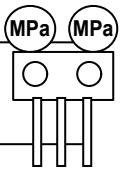
Replace Compressor

Stops soon after starting up

- Is there open or loose connection cable?

- Is Gas Pipe Valve open? (Low Pressure is too low)

- Check if Refrigerant is leaking. (Recharge Refrigerant)



- Check if Strainer is clogged. (PARTS INFORMATION 4)

- Check Filter PCB, Main PCB, connection of Compressor,and winding resistance. (Refer to the next page).

>> If there is no failure, the defect of Compressor can be considered. (Compression part broken or valve defective.)

Replace Compressor

Abnormal noise

- Check if vibration noise by loose bolt or contact noise of piping is happening.

▶Defective Compressor can be considered. (due to inside dirt clogging or broken component)

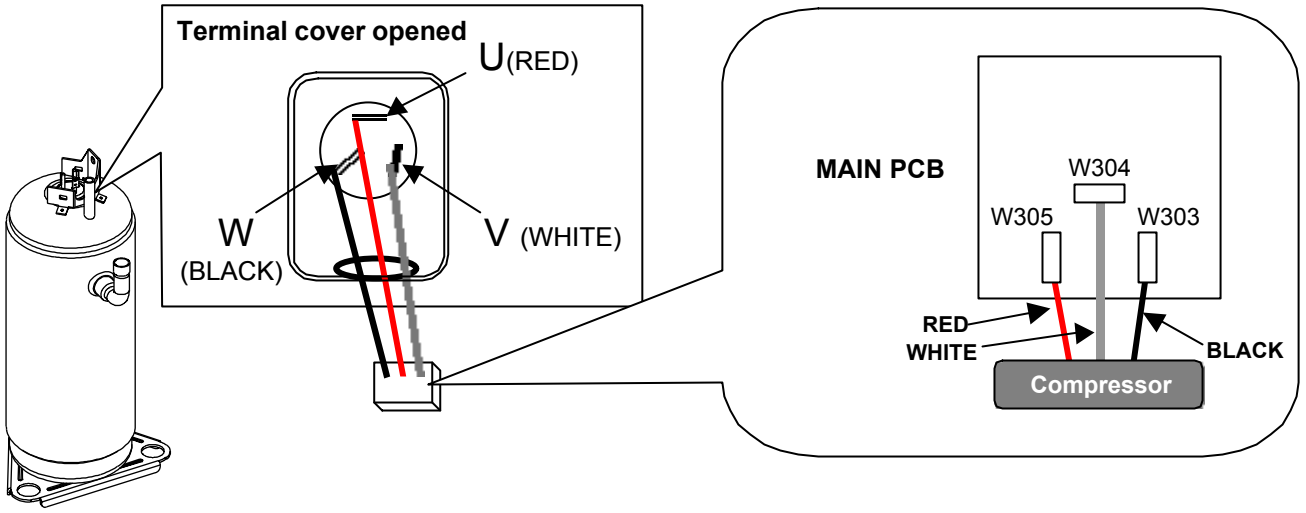
Replace Compressor

SERVICE PARTS INFORMATION 2

Inverter Compressor

Check Point 1 : Check Connection

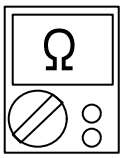
- Check terminal connection of Compressor (loose or incorrect wiring)
- Check connection of Main PCB (Loose or incorrect wiring)

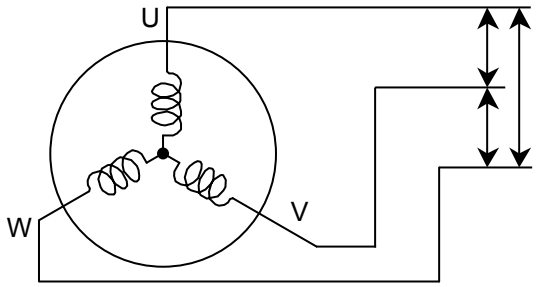


Check Point 2 : Check Winding Resistance

- Check winding resistance of each terminal

▶ **If the resistance value is 0Ω or infinite, replace Compressor.**





- For AO*18LMAK2/ 24LMAM2
  Resistance Value : 1.41 Ω (at 20°C)
- For AO*30LMAW4
  Resistance Value : 0.88 Ω (at 20°C)

Check Point 3 : Replace Main PCB

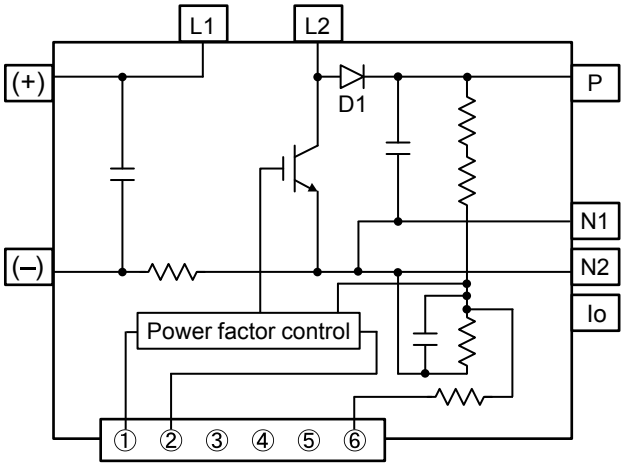
▶ **If the symptom does not change with above Check 1, 2, replace Main PCB.**

SERVICE PARTS INFORMATION 3

Active Filter Module

Check Point 1 : Check Open or Short-circuit and Diode (D1)

・Remove connector, check the open or short-circuit and the diode in the module



Check the open or short-circuit

Terminal		Resistance value
Tester(+)	Tester(-)	
(+)	(–)	**360kΩ ±20%**
(–)	N1	**0Ω**
P	(+)	**720kΩ ±20%**
L1	L2	**1.01MΩ / 761kΩ** (Ref. value 1) (Ref. value 2)
P	N1	**360kΩ ±20%**
L1,L2	Control Box	**∞Ω**
L2	N2	**1.65MΩ / 1.14MΩ** (Ref. value 1) (Ref. value 2)

Check the diode

Terminal		Resistance value
Tester(+)	Tester(-)	
L2	P	**1.32MΩ / 663kΩ** (Ref. value 1) (Ref. value 2)
P	L2	**1.01MΩ / 762kΩ** (Ref. value 1) (Ref. value 2)

Ref. value 1
Specifications for Multimeter
Manufacturer : FLUKE
Model name : FLUKE11
Power source : DC9V.

Ref. value 2
Specifications for Multimeter
Manufacturer : Sanwa
Model name : PM3
Power source : DC3V.

▶ **If it is abnormal,replace ACTIVE FILTER MODULE**

Check Point 2 : Check the Output DC voltage (between P and N1)

・Check the Output DC voltage (between P and N1) of compressor stopping and operating.

>> If the output voltage of compressor operating is less than the output voltage of compressor stopping, Active Filter Module is detective. >> **Replace Active Filter Module**

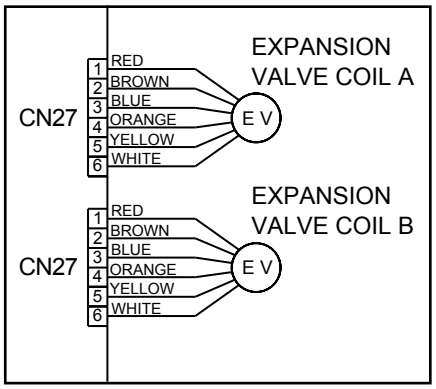
SERVICE PARTS INFORMATION 4

Outdoor unit Electronic Expansion Valve
(EEV)

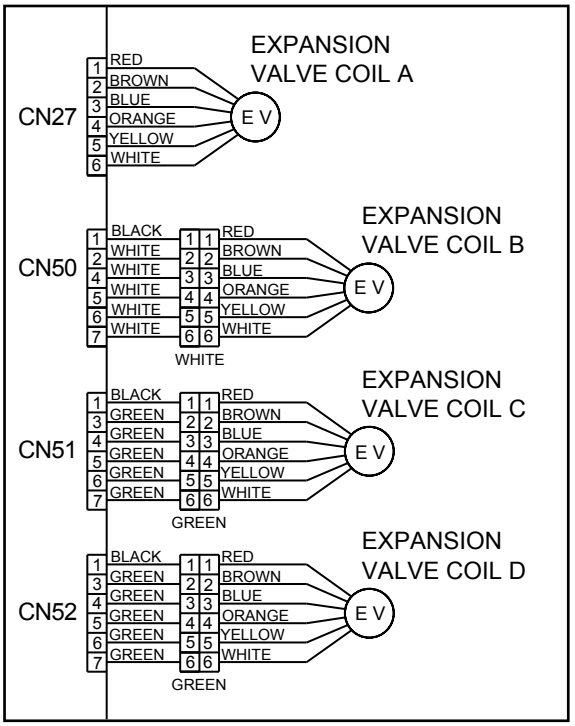
Check Point 1 : Check Connections

・Check connection of connector
(Loose connector or open cable)

For AO*18LMAK2 / AO*24LMAM2



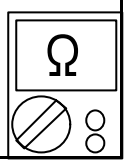
For AO*30LMAW4



Check Point 2 : Check Coil of EEV

・Remove connector, check each winding resistance of Coil.

Read wire	Resistance value
White - Red	**46**Ω ± **4**Ω at 20°C
Yellow - Brown	
Orange - Red	
Blue - Brown	

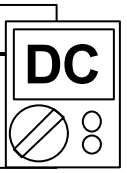


▶ **If Resistance value is abnormal, replace EEV.**

Check Point 3 : Check Voltage from Main PCB.

・Remove Connector and check Voltage (DC12V)

▶ **If it does not appear, replace Main PCB.**



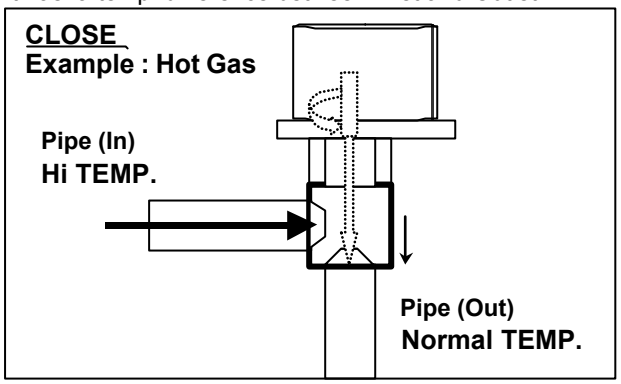
Check Point 4 : Check Noise at start up

・Turn on Power and check operation noise.

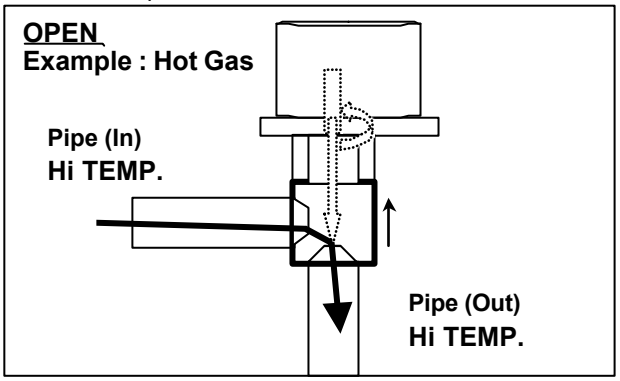
▶ **If an abnormal noise does not show, replace Main PCB.**

Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

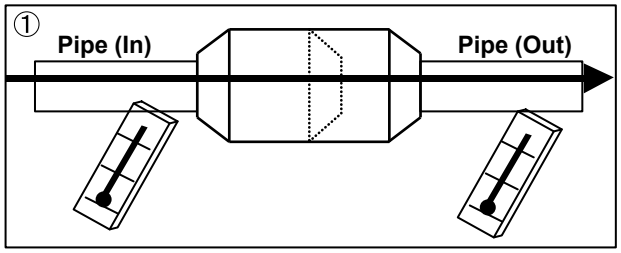


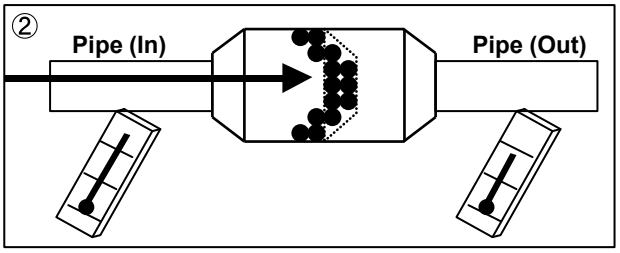
If it is open,
it has no temp. difference between Inlet and Outlet.



Check Point 6 : Check Strainer

Strainer normally does not have temperature difference between inlet and outlet as shown in ① ,
but if there is a difference as shown in ② , there is a possibility of inside clogged. In this case, replace Strainer.

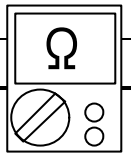




SERVICE PARTS INFORMATION 5

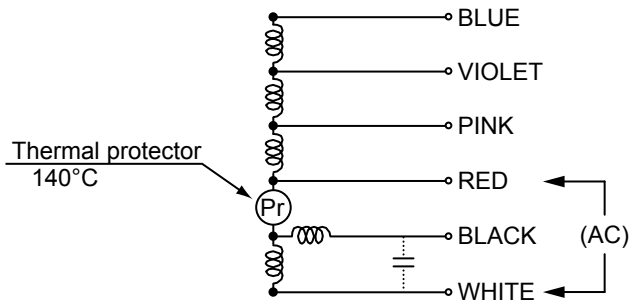
Indoor Unit Fan Motor

Check Point : AB*14/ 18/ 24LBAJ



・Check each winding resistance of the motor

▶ **If Resistance value is abnormal, replace motor.**



AB*14LBAJ

Read Wire	Resistance value
White – Red	**445** Ω ±**8%**
Red – Black	**346** Ω ±**8%**
Red – Pink	**80.0** Ω ±**8%**
Pink – Violet	**80.0** Ω ±**8%**
Violet – Blue	**124** Ω ±**8%**

at 20°C

AB*18LBAJ

Read Wire	Resistance value
White – Red	**291** Ω ±**8%**
Red – Black	**204** Ω ±**8%**
Red – Pink	**78.5** Ω ±**8%**
Pink – Violet	**78.5** Ω ±**8%**
Violet – Blue	**182** Ω ±**8%**

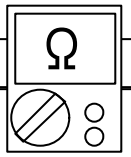
at 20°C

AB*24LBAJ

Read Wire	Resistance value
White – Red	**222** Ω ±**8%**
Red – Black	**175** Ω ±**8%**
Red – Pink	**63.5** Ω ±**8%**
Pink – Violet	**63.5** Ω ±**8%**
Violet – Blue	**279** Ω ±**8%**

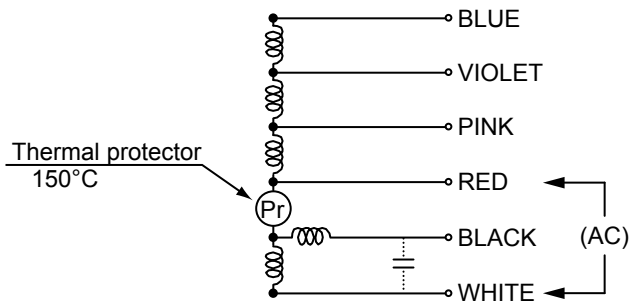
at 20°C

Check Point : AR*9LUAB/ 12/ 14/ 18/ 22LUAD



・Check each winding resistance of the motor

▶ **If Resistance value is abnormal, replace motor.**



AR*9LUAB

Read Wire	Resistance value
White – Red	**367** Ω ±**8%**
Red – Black	**145** Ω ±**8%**
Red – Pink	**62.6** Ω ±**8%**
Pink – Violet	**62.6** Ω ±**8%**
Violet – Blue	**160** Ω ±**8%**

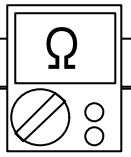
at 20°C

AR*12/ 14/ 18/ 22LUAD

Read Wire	Resistance value
White – Red	**90.3** Ω ±**8%**
Red – Black	**152** Ω ±**8%**
Red – Pink	**42.9** Ω ±**8%**
Pink – Violet	**42.9** Ω ±**8%**
Violet – Blue	**222** Ω ±**8%**

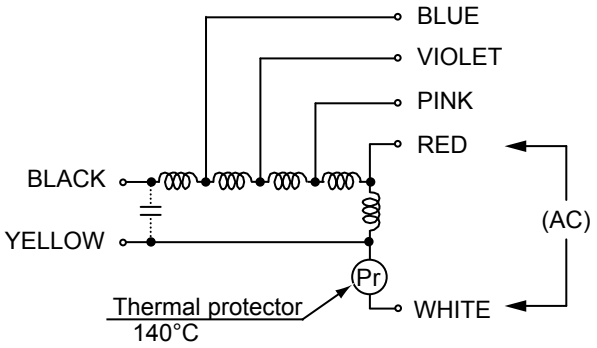
at 20°C

Check Point : AU*12/ 14/ 18LBAB



・Check each winding resistance of the motor

▶ **If Resistance value is abnormal, replace motor.**



AU*12/ 14LBAB

Read Wire	Resistance value
White – Red	**427** Ω ±**8%**
Blue – Black	**191** Ω ±**8%**
Red – Pink	**92.8** Ω ±**8%**
Pink – Violet	**92.8** Ω ±**8%**
Violet – Blue	**191** Ω ±**8%**

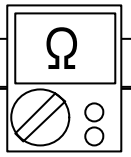
at 20°C

AU*18LBAB

Read Wire	Resistance value
White – Red	**431** Ω ±**8%**
Blue – Black	**10.7** Ω ±**8%**
Red – Pink	**55.5** Ω ±**8%**
Pink – Violet	**35.7** Ω ±**8%**
Violet – Blue	**55.5** Ω ±**8%**

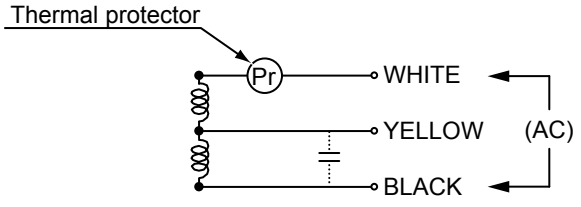
at 20°C

Check Point : AS*7/ 9/ 12LMACW



・Check each winding resistance of the motor

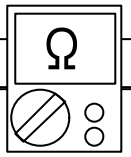
▶ **If Resistance value is abnormal, replace motor.**



Read Wire	Resistance value
Black – Yellow	**138** Ω ±**8%**
White – Yellow	**136** Ω ±**8%**

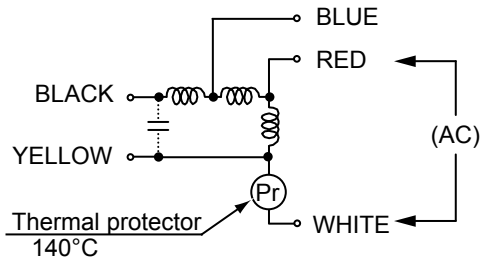
at 20°C

Check Point : AS*18/ 24LBAJ



・Check each winding resistance of the motor

▶ **If Resistance value is abnormal, replace motor.**



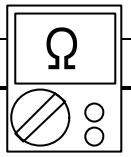
Read Wire	Resistance value
White – Red	**129** Ω ±**8%**
Blue – Black	**21.0** Ω ±**8%**
Blue – Red	**277** Ω ±**8%**

at 20°C

SERVICE PARTS INFORMATION 6

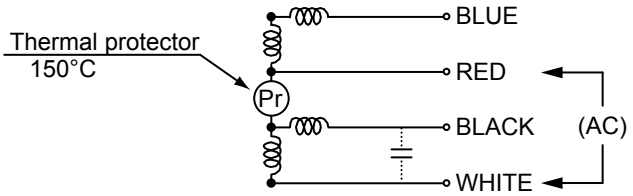
Outdoor Unit Fan Motor

Check Point : AO*18LMAK2/ 24LMAM2



・Check each winding resistance of the motor

▶ **If Resistance value is abnormal, replace motor.**



Read Wire	Resistance value
White - Red	**54.7** Ω ±**8%**
Red - Black	**96.3** Ω ±**8%**
Red - Blue	**185** Ω ±**8%**

at 20°C

For AB*F, AR*F, AU*F, AS*A, AG*F type

SERVICE PARTS INFORMATION 7

Indoor unit fan motor

Check Point 1 : Check rotation of Fan

・Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
>>If Fan or Bearing is abnormal, replace it.

Check Point 2 : Check resistance of Indoor Fan Motor

・Refer to below. Circuit-test "Vm" and "GND" terminal.
(Vm: DC voltage, GND: Earth terminal)
>>If they are short-circuited (below 300 kΩ), replace Indoor fan motor and Controller PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Blue)	Feed back (FG)
2 (Yellow)	Speed command (Vsp)
3 (White)	Control voltage (Vcc)
4 (Black)	Earth terminal (GND)
5	No function
6 (Red)	DC voltage (Vm)

For AO*30LMAW4

SERVICE PARTS INFORMATION 8

Outdoor unit fan motor

Check Point 1 : Check rotation of Fan

・Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
>>If Fan or Bearing is abnormal, replace it.

Check Point 2 : Check resistance of Outdoor Fan Motor

・Refer to below. Circuit-test "Vm" and "GND" terminal.
(Vm: DC voltage, GND: Earth terminal)
>>If they are short-circuited (below 300 kΩ), replace Outdoor fan motor and Main PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Brown or Blue)	Feed back (FG)

Refrigerant
R410A

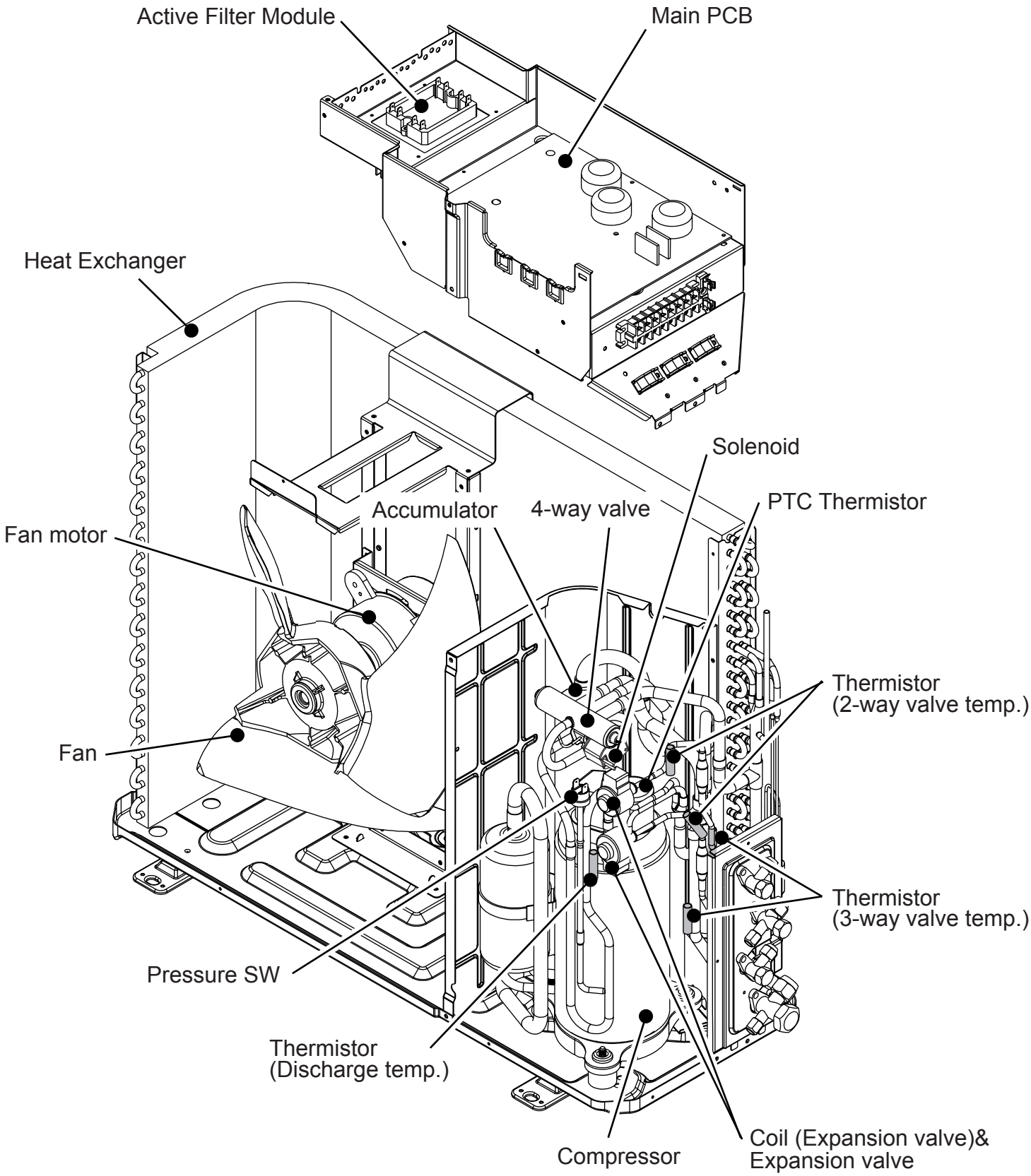
Universal Floor / Ceiling
Duct / Cassette
Wall Mounted / Floor type
INVERTER (MULTI)

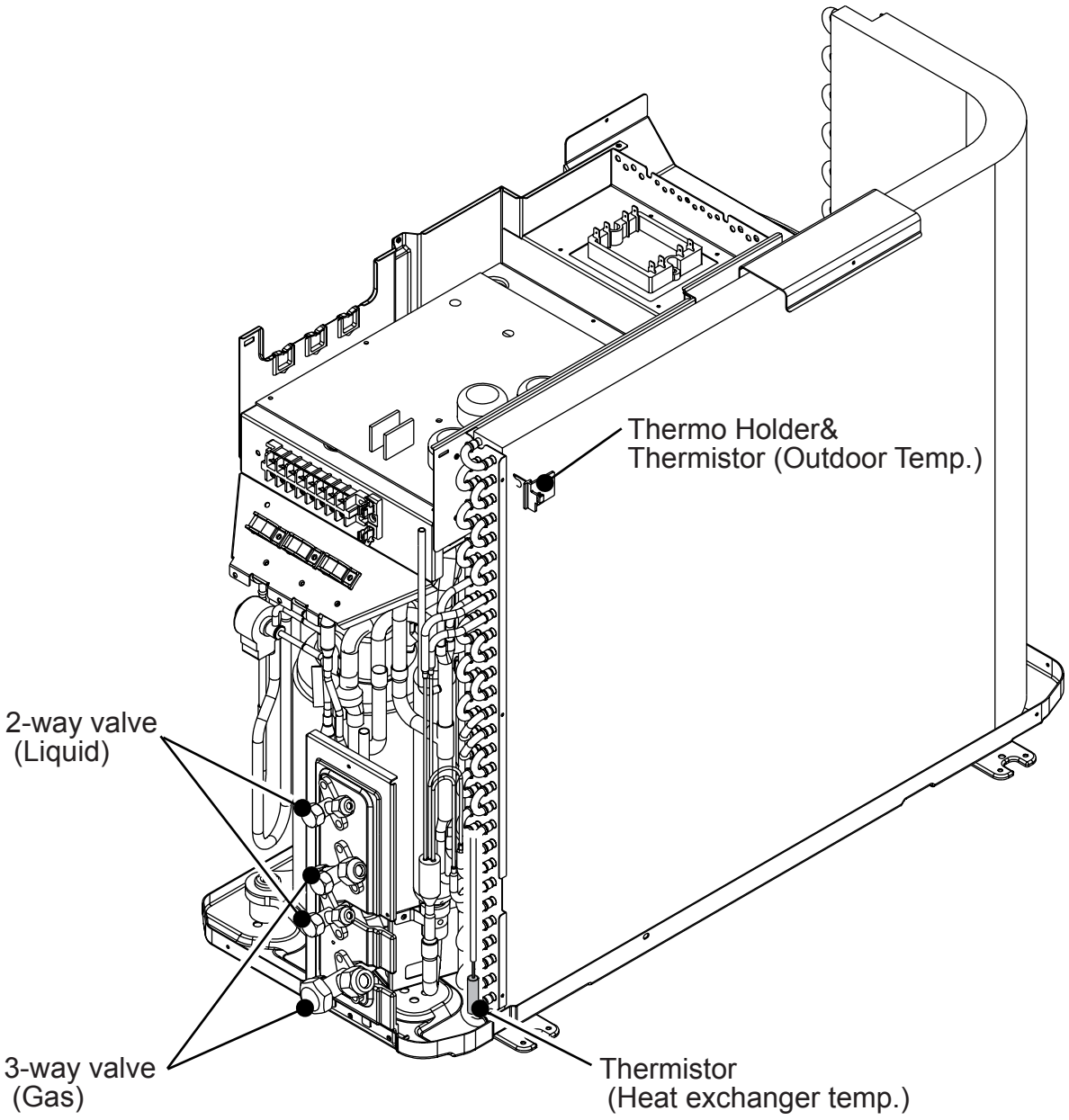
3 . REPLACEMENT PARTS

1. REPLACEMENT PARTS (For OUTDOOR UNIT)

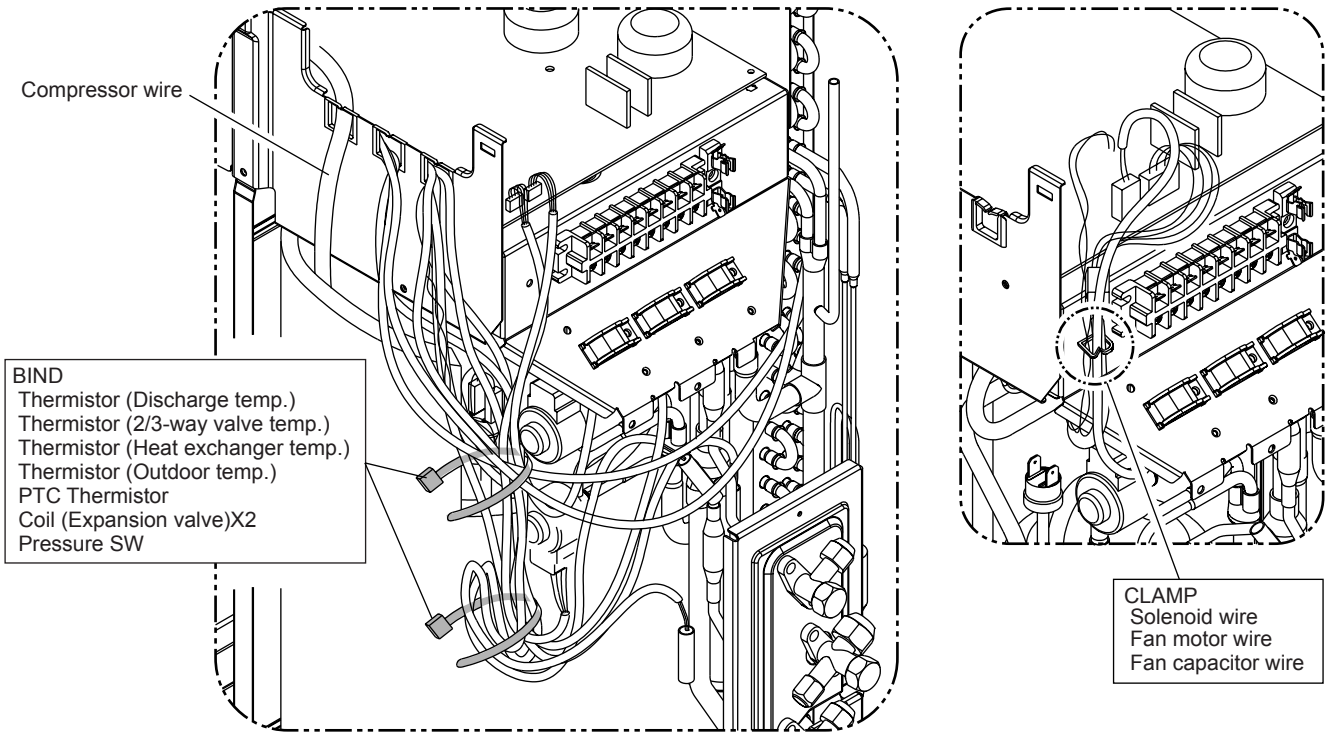
1-1 For AO*18LMAK2/ 24LMAM2

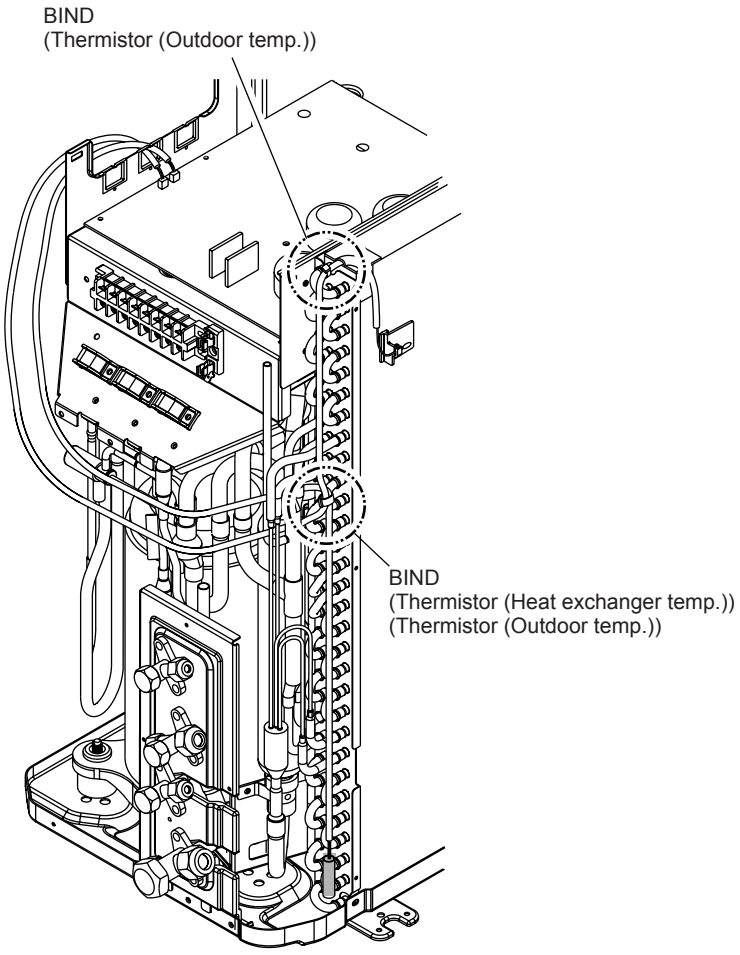
1-1-1 PARTS LAYOUT DRAWING




Thermo Holder&
Thermistor (Outdoor Temp.)
2-way valve
(Liquid)
3-way valve
(Gas)
Thermistor
(Heat exchanger temp.)

1-1-2 WIRING (For AO*18LMAK2/ 24LMAM2)

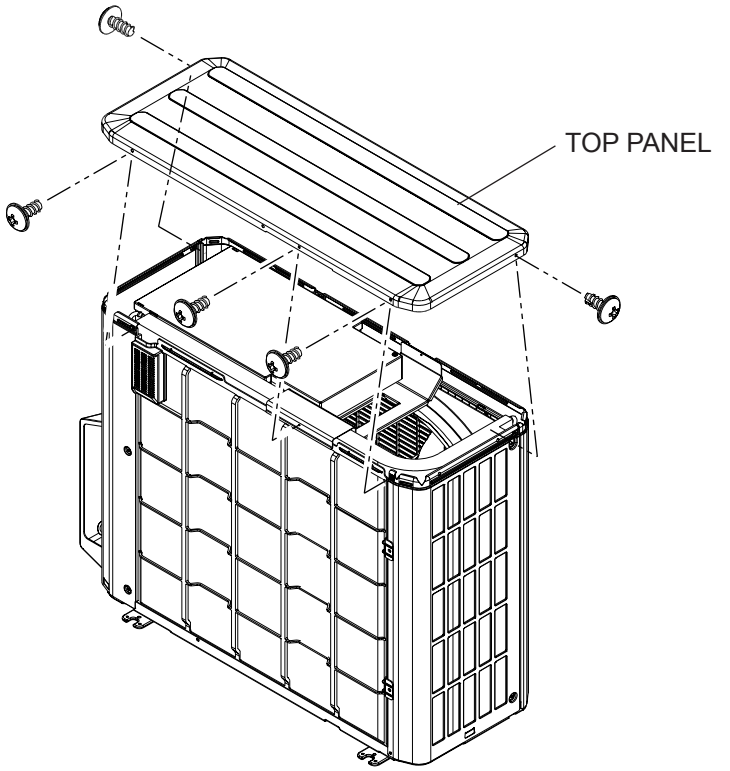




1-1-3 DISASSEMBLY PROCESS (For AO*18LMAK2/ 24LMAM2)

1. TOP PANEL removal

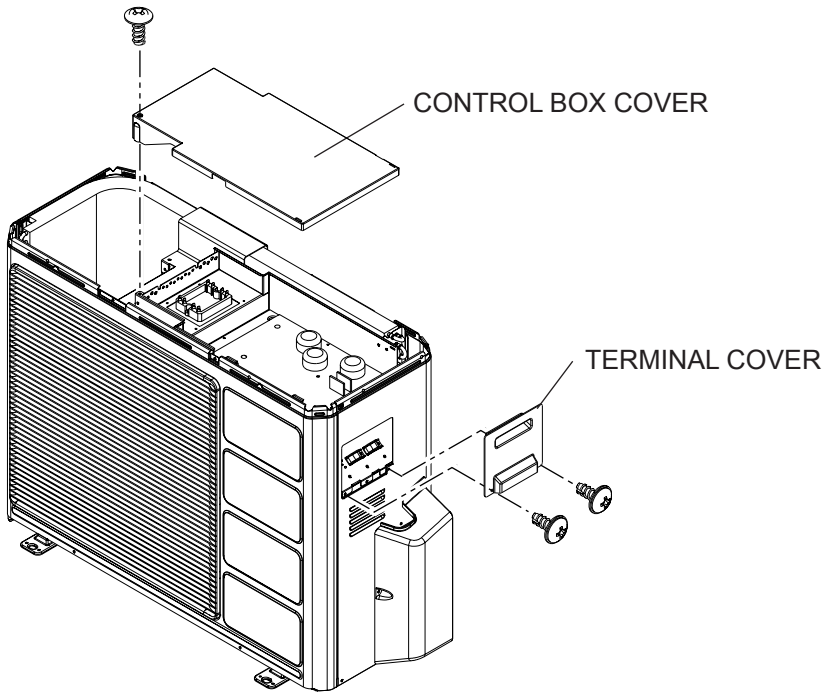
- Remove the 5 mounting screws.
- Remove the TOP PANEL upward.



REAR VIEW

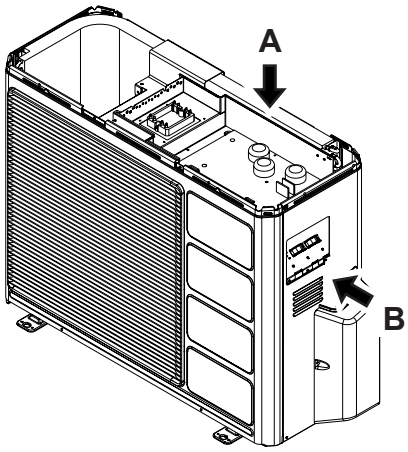
2. CONTROL BOX COVER removal

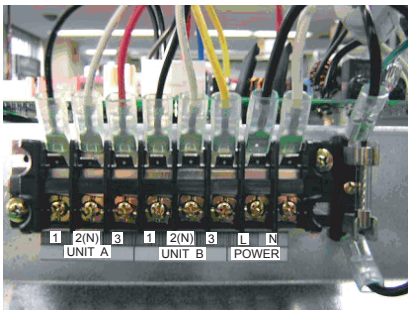
- Remove the 3 mounting screws.
- Remove the CONTROL BOX COVER and TERMINAL COVER.



3. MAIN PCB removal

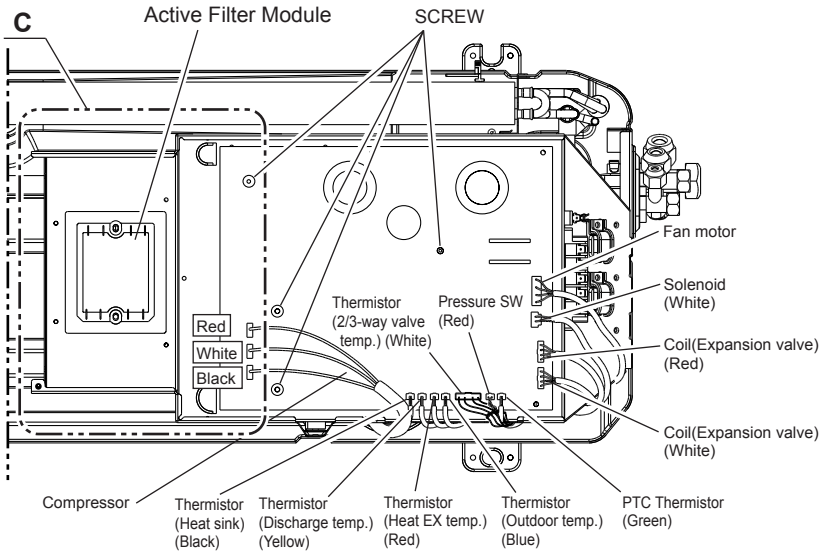
- Remove the 4 mounting screws.
- Remove the connectors and cords. (Refer to VIEW -A,-B)
- Remove the MAIN PCB.



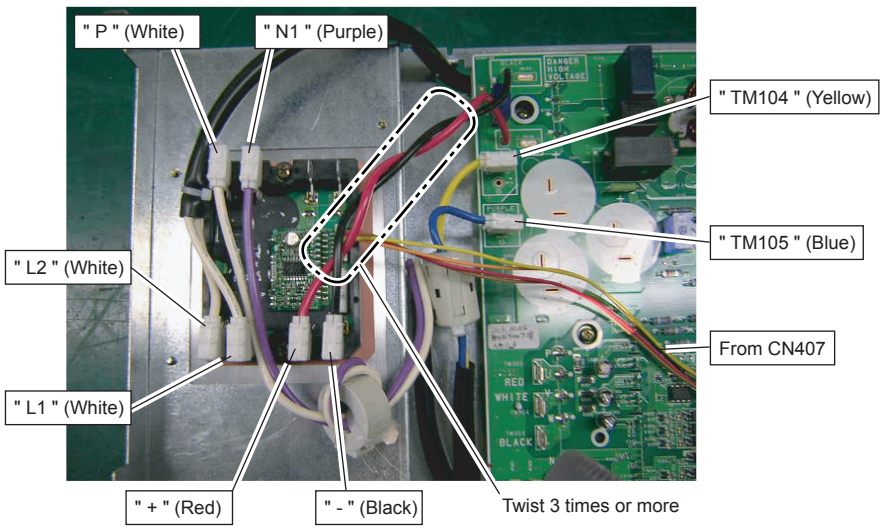


VIEW - B

LABEL	Wire
UNIT A: 1	W4(Black)
UNIT A: 2	W5(White)
UNIT A: 3	W8(Red)
UNIT B: 1	W6(Black)
UNIT B: 2	W7(White)
UNIT B: 3	W9(Yellow)
POWER: L	Fuse holder (Black)
POWER: N	W2(White)



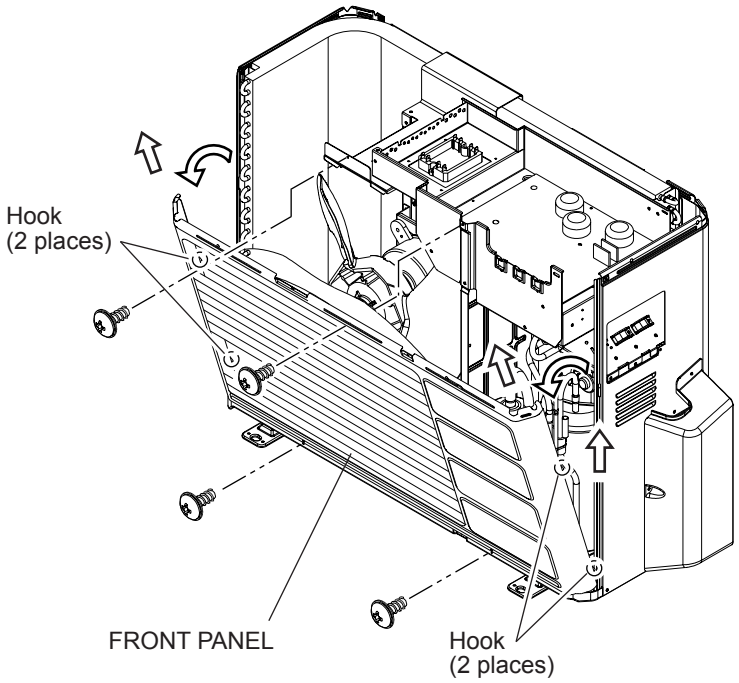
VIEW - A



DETAIL C

4. FRONT PANEL removal

- Remove the 4 mounting screws.
- Remove the FRONT PANEL by sliding upward.

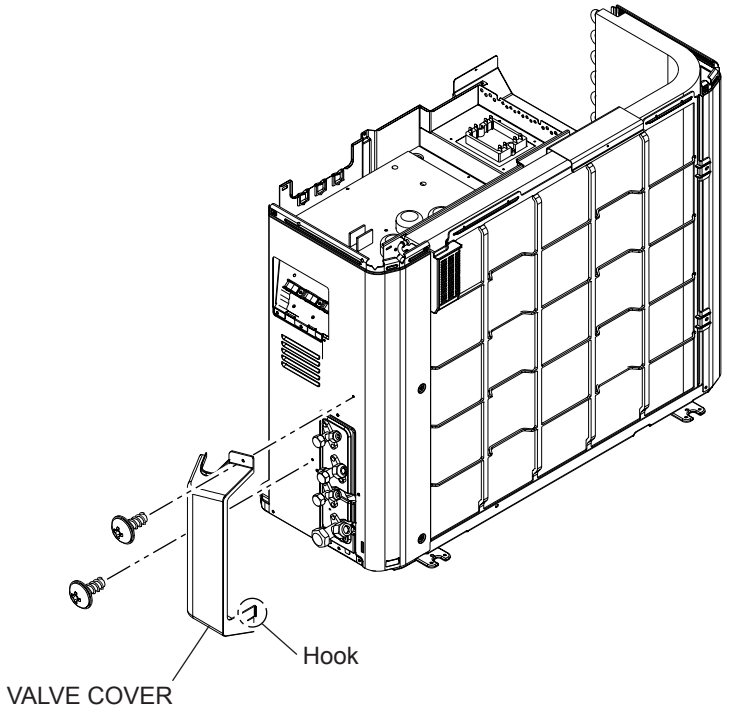


Replaceable Component

Compressor
Accumulator
Solenoid
Thermistor (Discharge temp.)
Thermistor (Outdoor temp.)
PTC Thermistor
Pressure SW
Coil (Expansion valve)
Fan motor & Fan

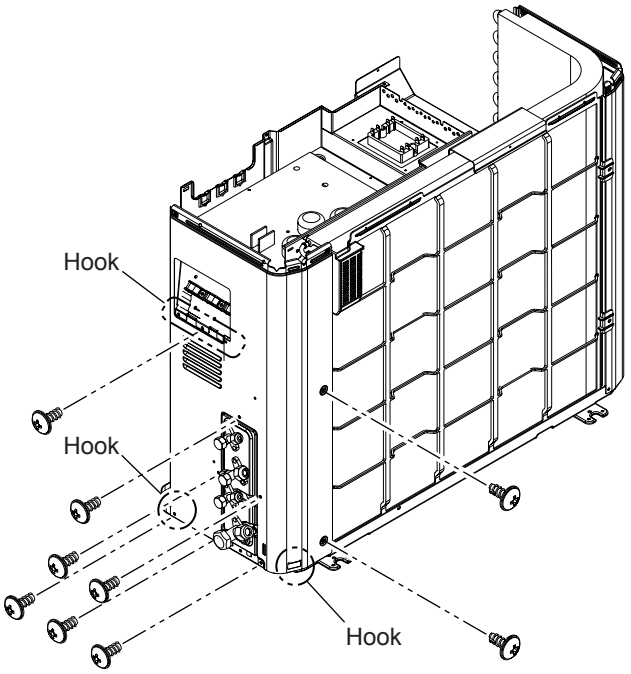
5. VALVE COVER removal

- Remove the VALVE COVER.

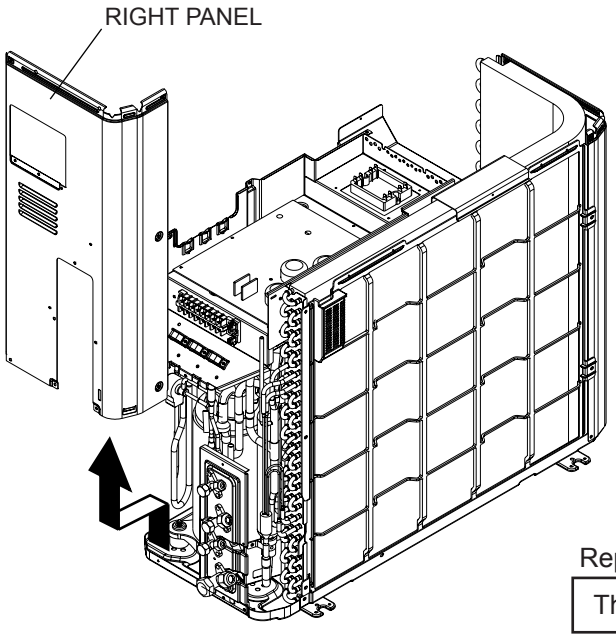


6. RIGHT PANEL removal

- Remove the 9 mounting screws.



- Remove the RIGHT PANEL by sliding upward.

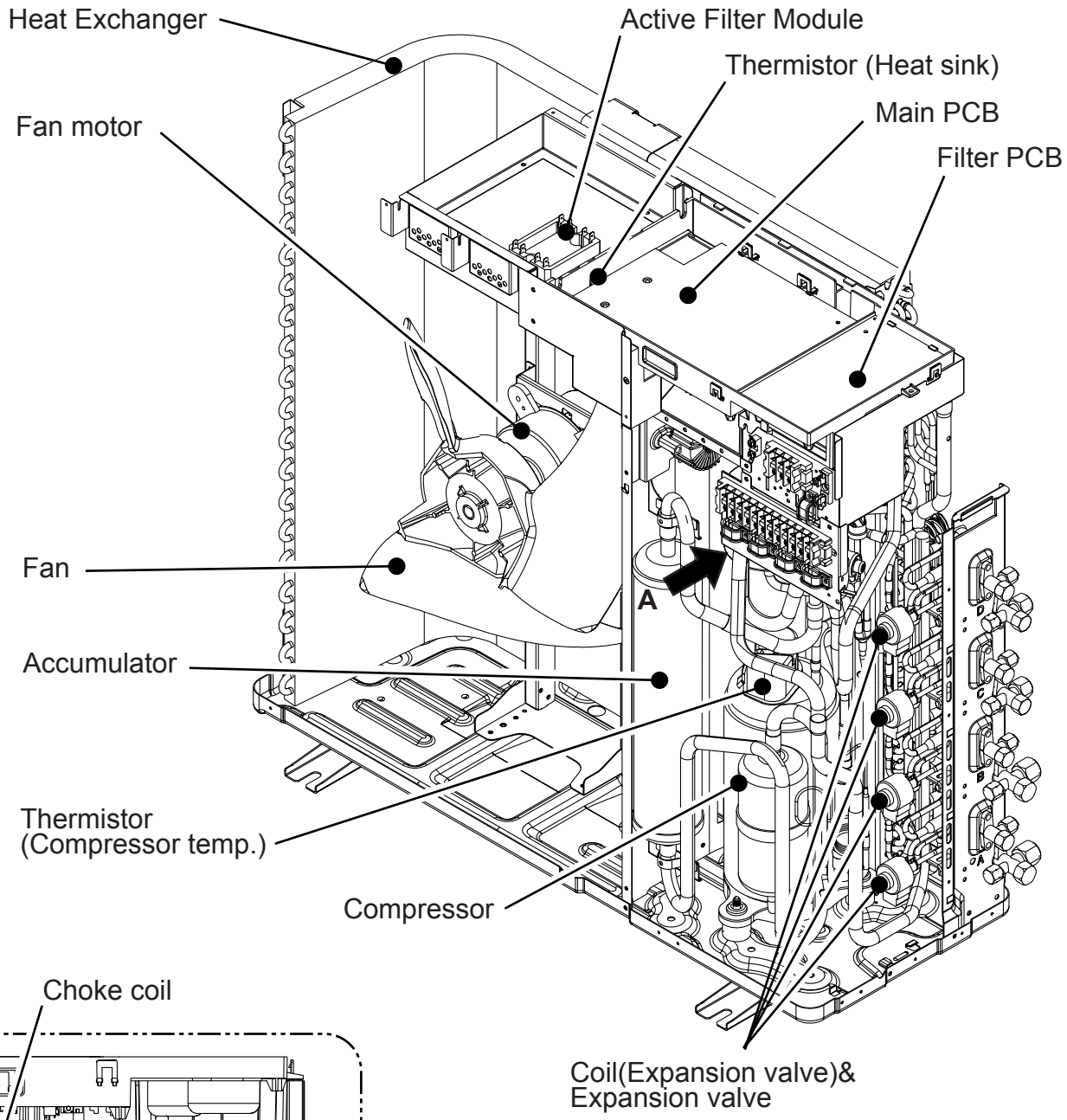


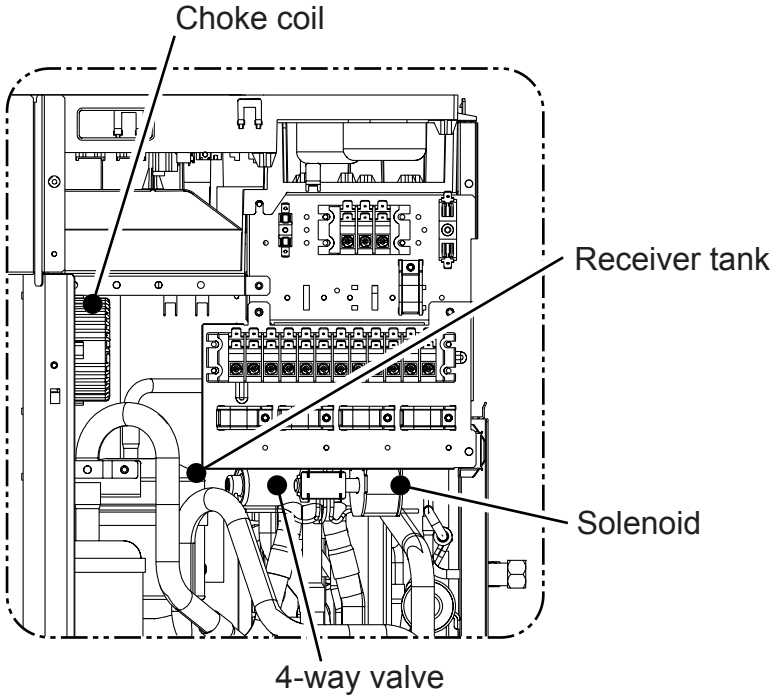
Replaceable Component

Thermistor (Heat exchanger temp.)

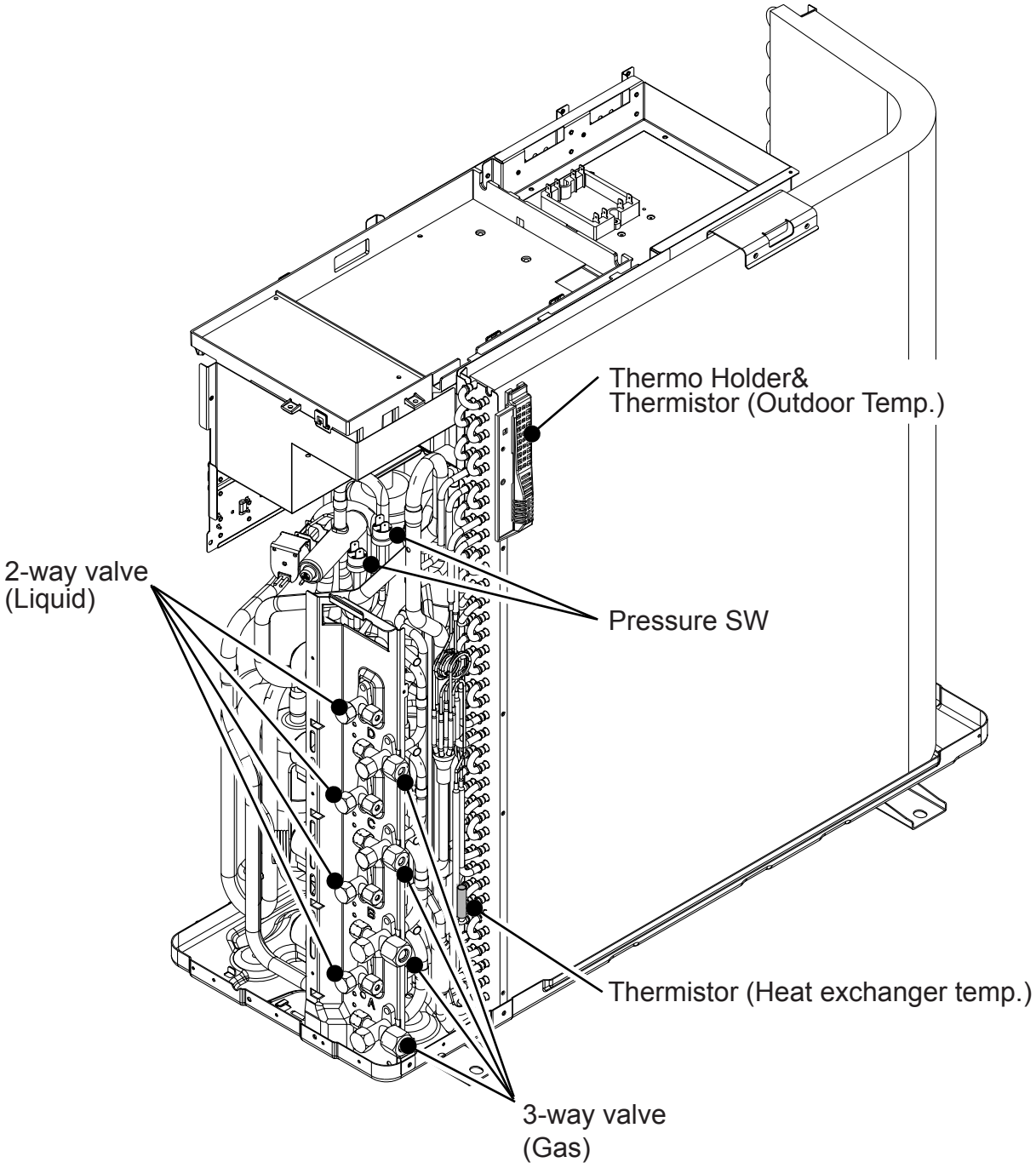
1-2 For AO*30LMAW4

1-2-1 PARTS LAYOUT DRAWING

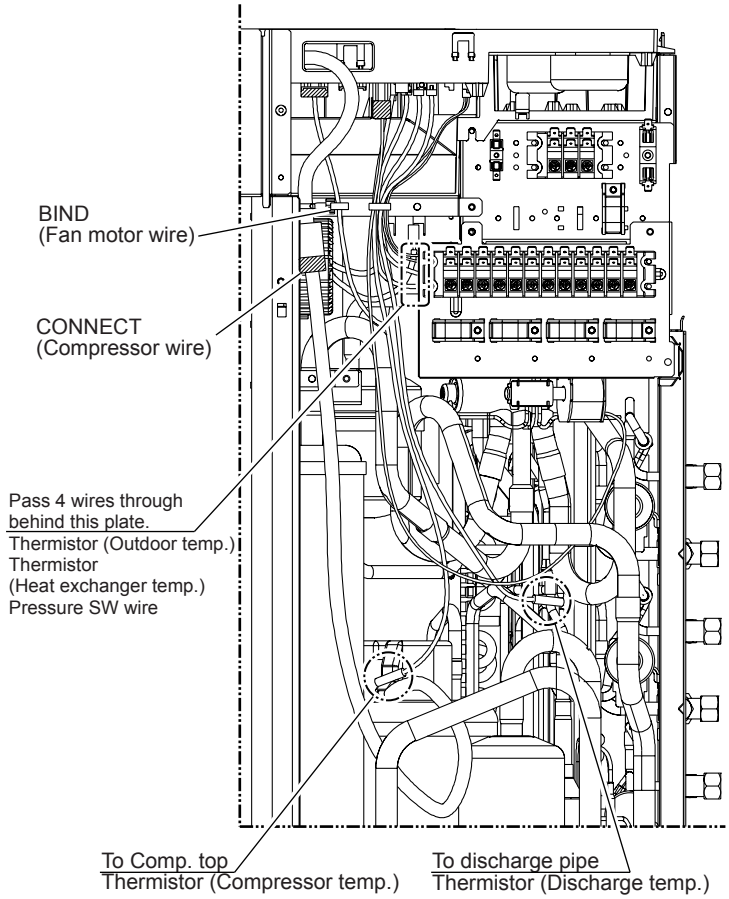


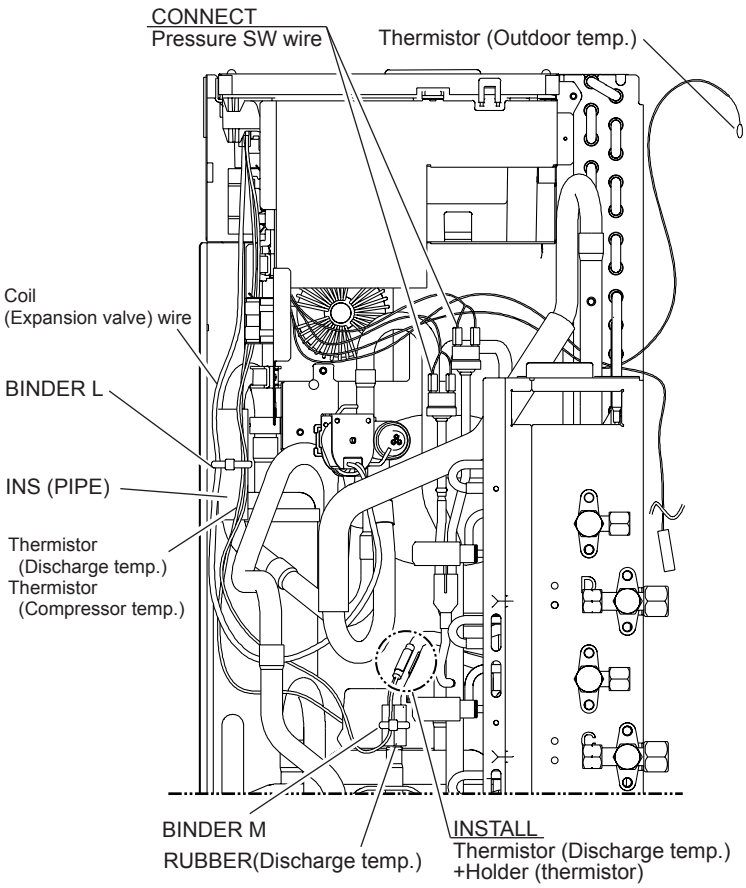


VIEW - A

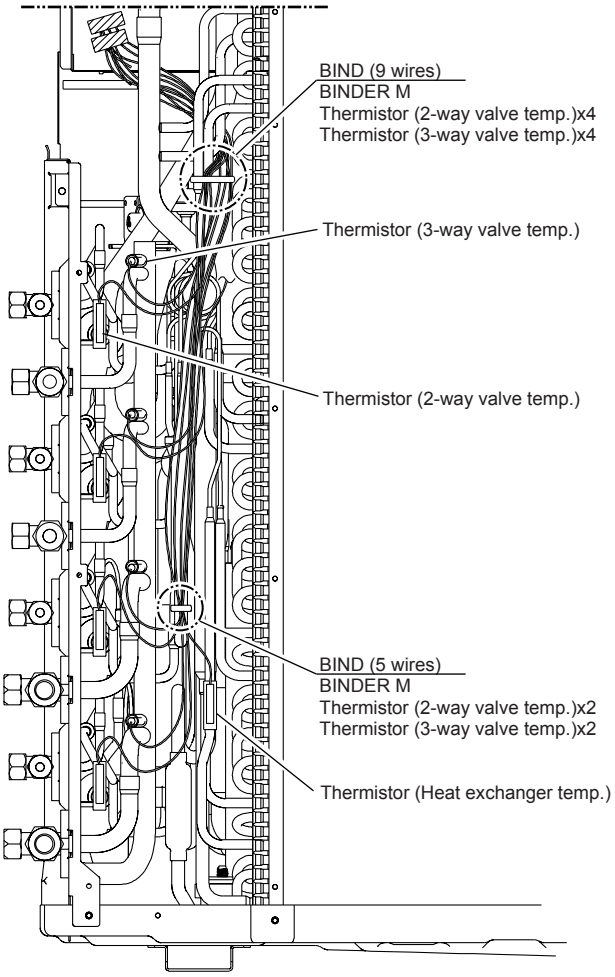

Thermo Holder&
Thermistor (Outdoor Temp.)
2-way valve
(Liquid)
Pressure SW
Thermistor (Heat exchanger temp.)
3-way valve
(Gas)

1-2-2 WIRING (For AO*30LMAW4)





RIGHT VIEW

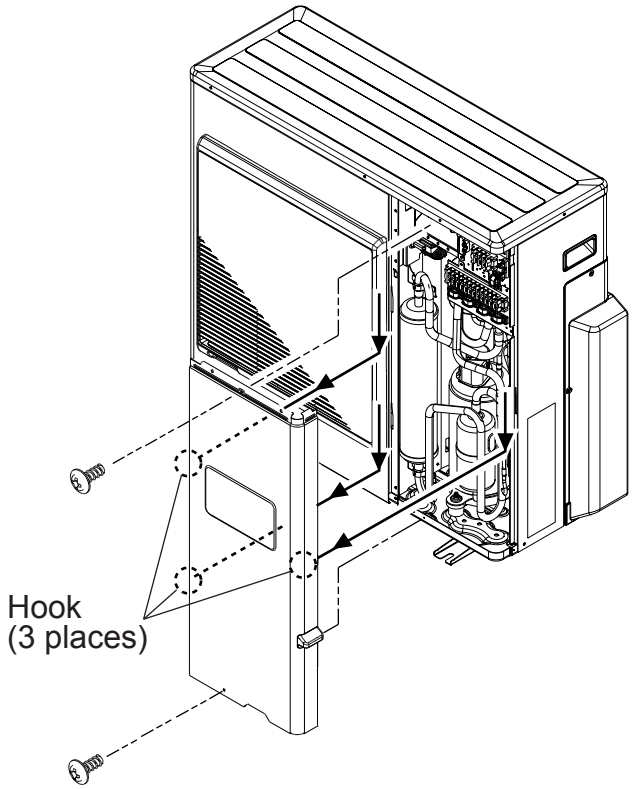


BACK VIEW

1-2-3 DISASSEMBLY PROCESS (For AO*30LMAW4)

1. SERVICE PANEL removal

- Remove the 2 mounting screws.
- Remove the SERVICE PANEL by sliding downward.

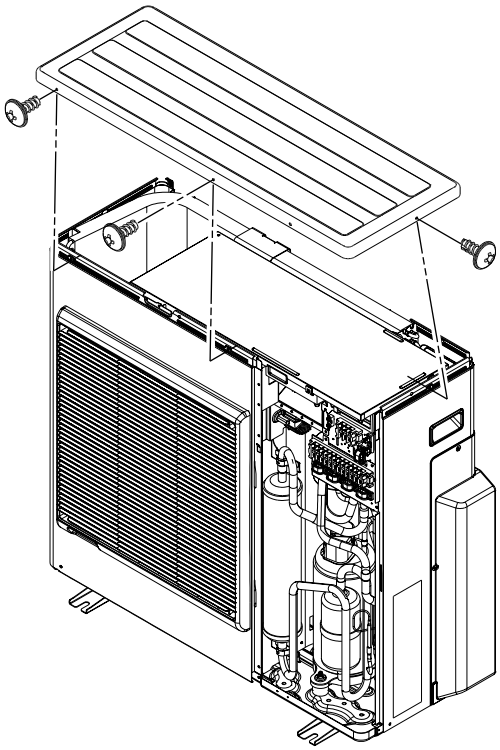


Replaceable Component

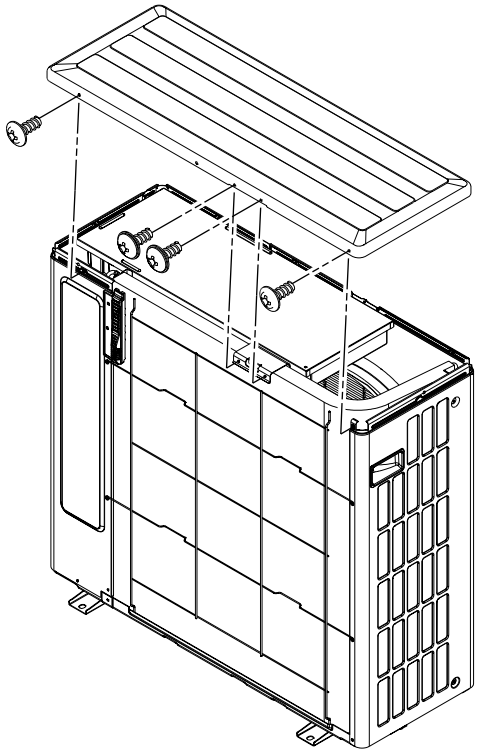
Compressor
Accumulator
4-way valve
Solenoid
Thermistor (Compressor temp.)
Thermistor (Discharge temp.)
Thermistor (Outdoor temp.)
Thermistor (Heat exchanger temp.)
Thermistor (2/3-way valve temp.)
Pressure SW
Coil (Expansion valve)

2. TOP PANEL removal

- Remove the 7 mounting screws.
- Remove the TOP PANEL upward.



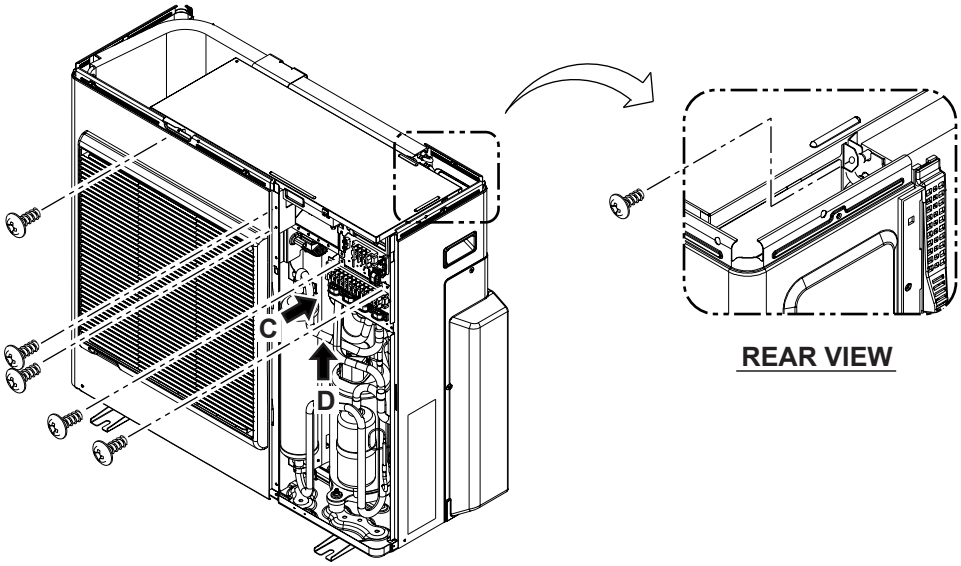
FRONT VIEW



REAR VIEW

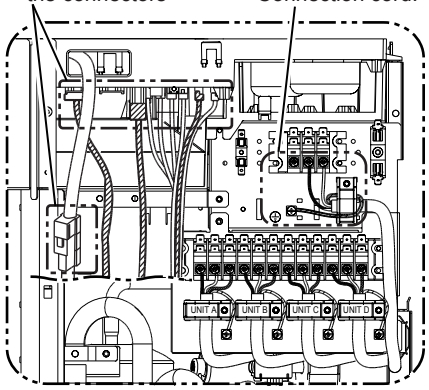
3. INVERTER BOX removal

- Remove the 6 mounting screws.
- Remove the connectors and cords. (Refer to VIEW -C,-D)
- Remove the INVERTER BOX upward.

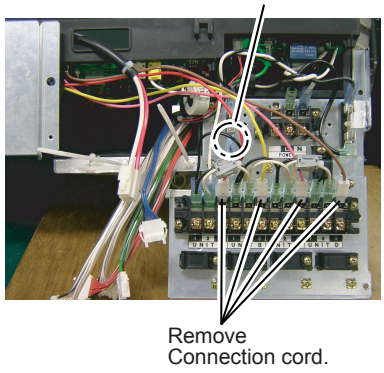


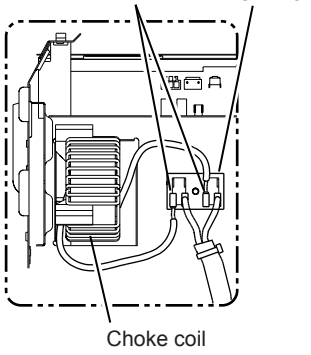
REAR VIEW

FRONT VIEW

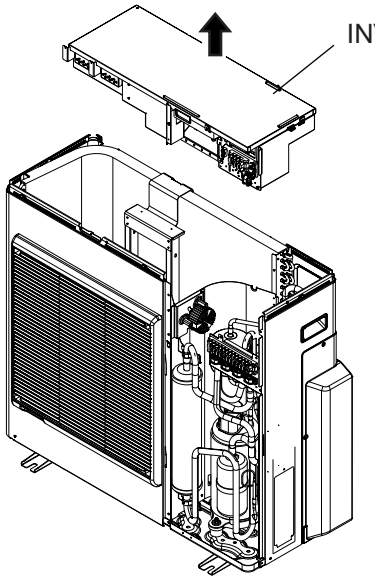


VIEW - C

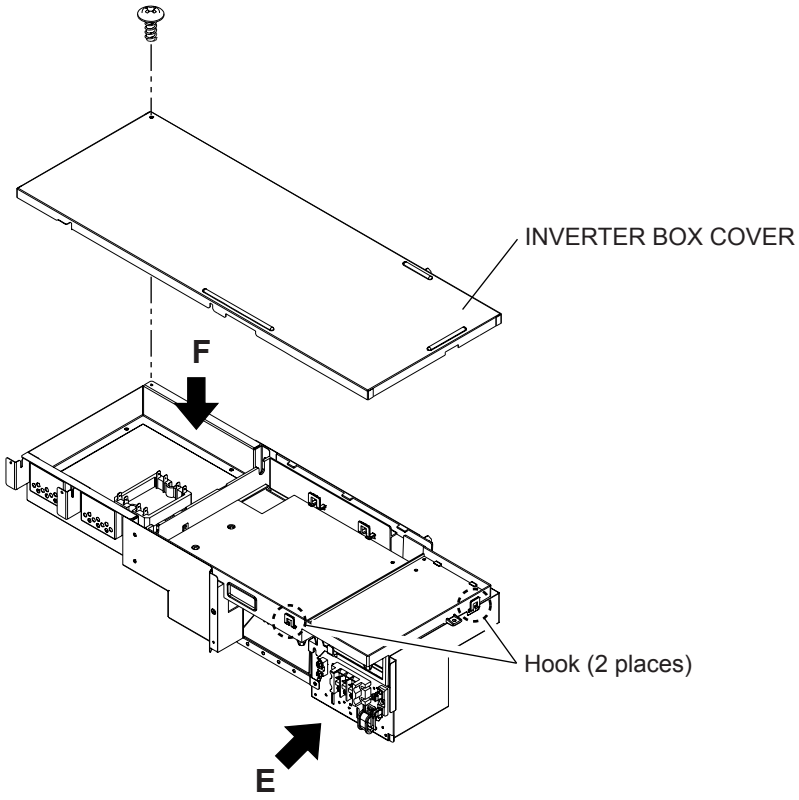




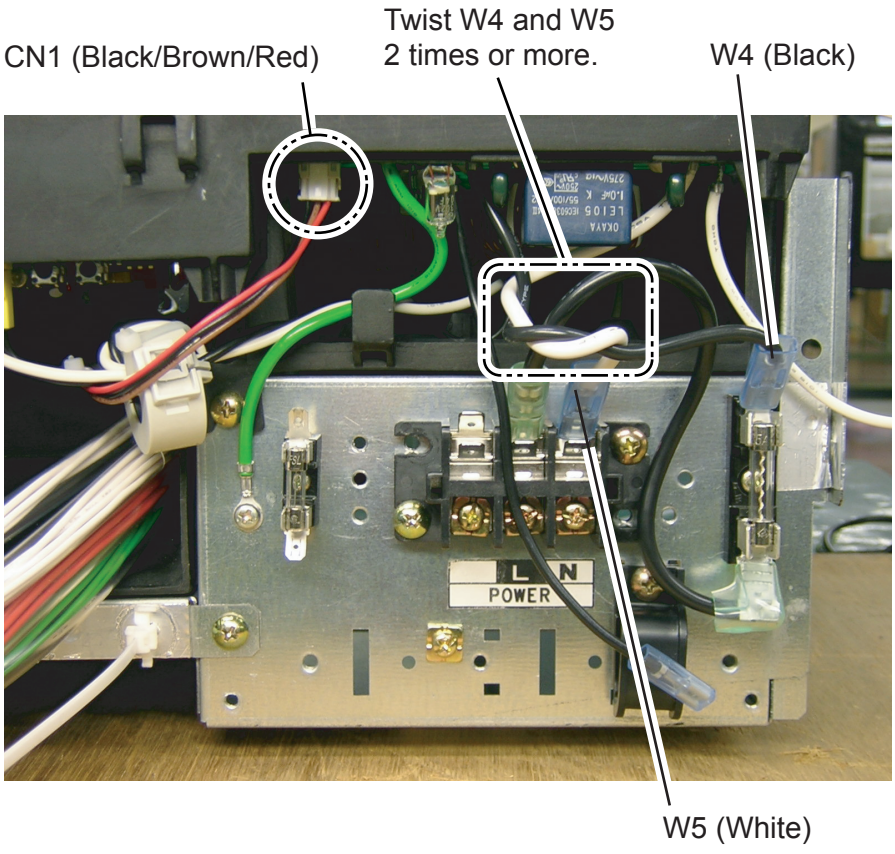
VIEW - D



- Remove the 1 mounting screw.
- Remove the INVERTER BOX COVER upward.

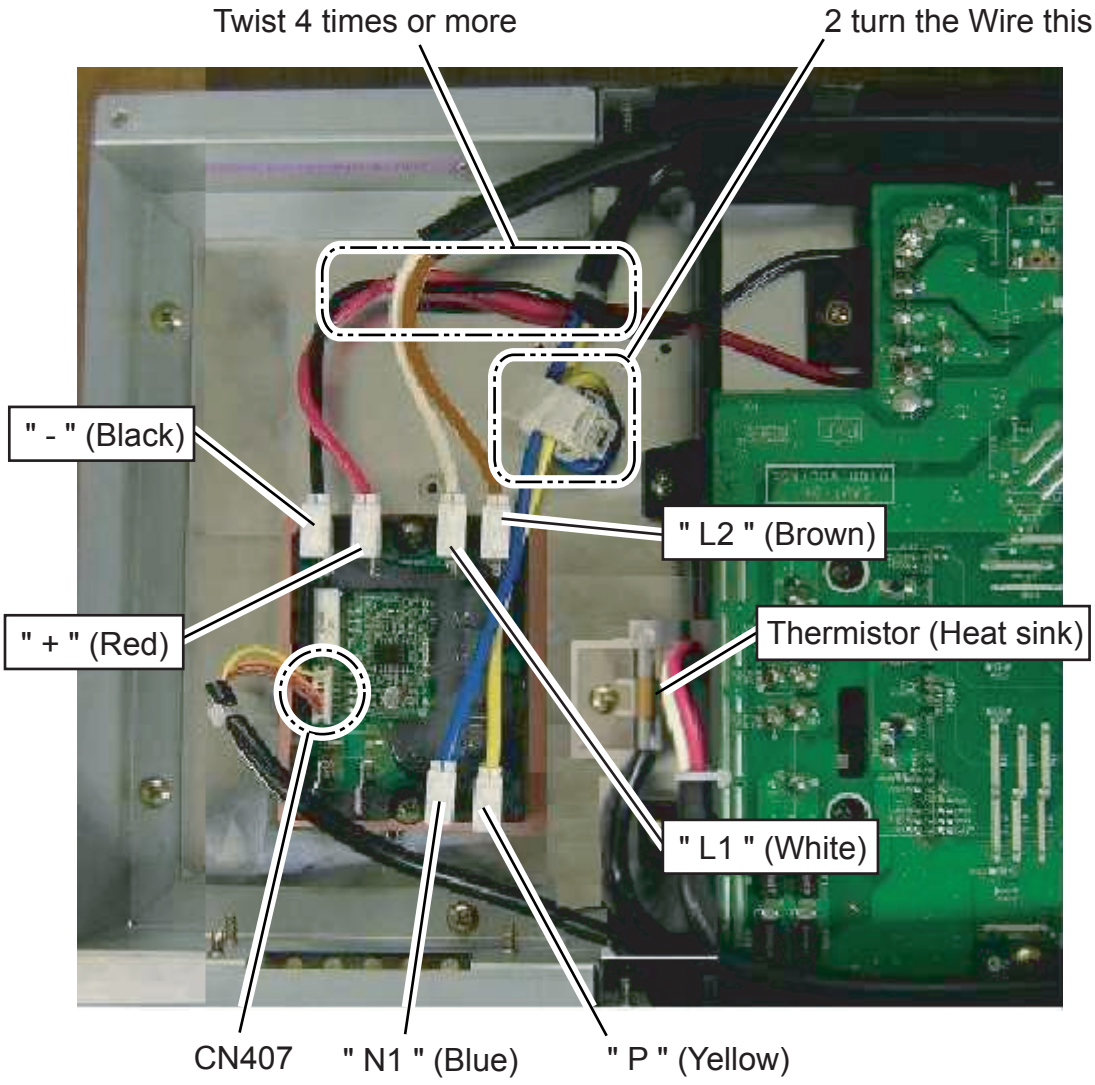


- Remove the connector and cords.

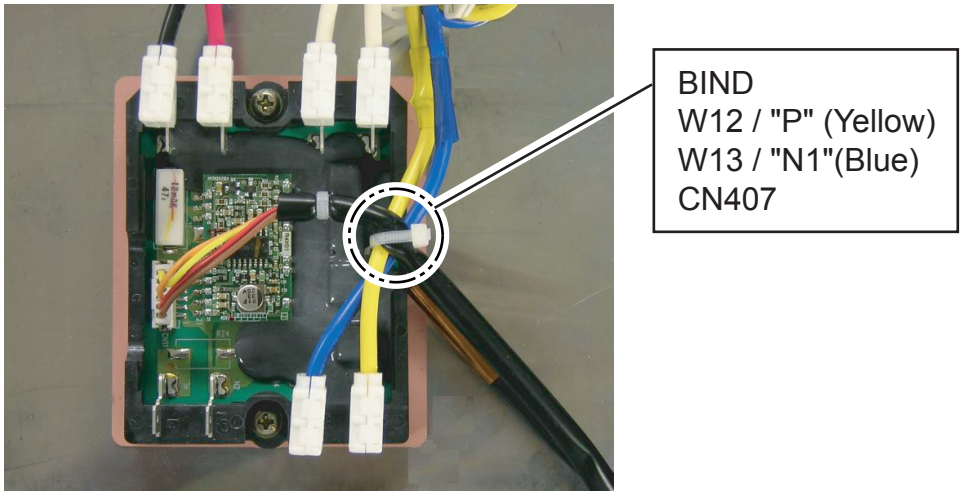


VIEW - E

▪ Remove the connector and cords.

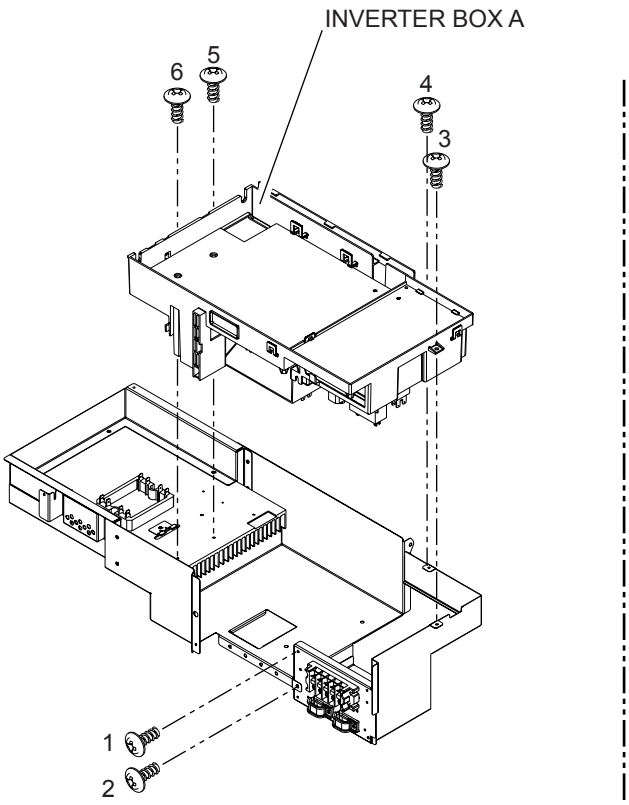


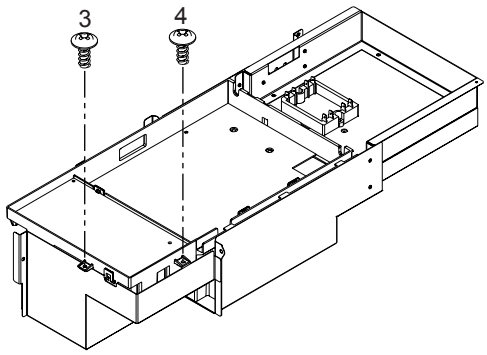
VIEW - F



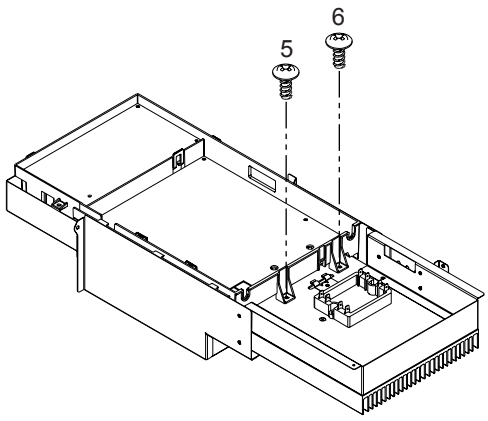
DETAIL

- Remove the 6 mounting screws.
- Remove the INVERTER BOX A upward.





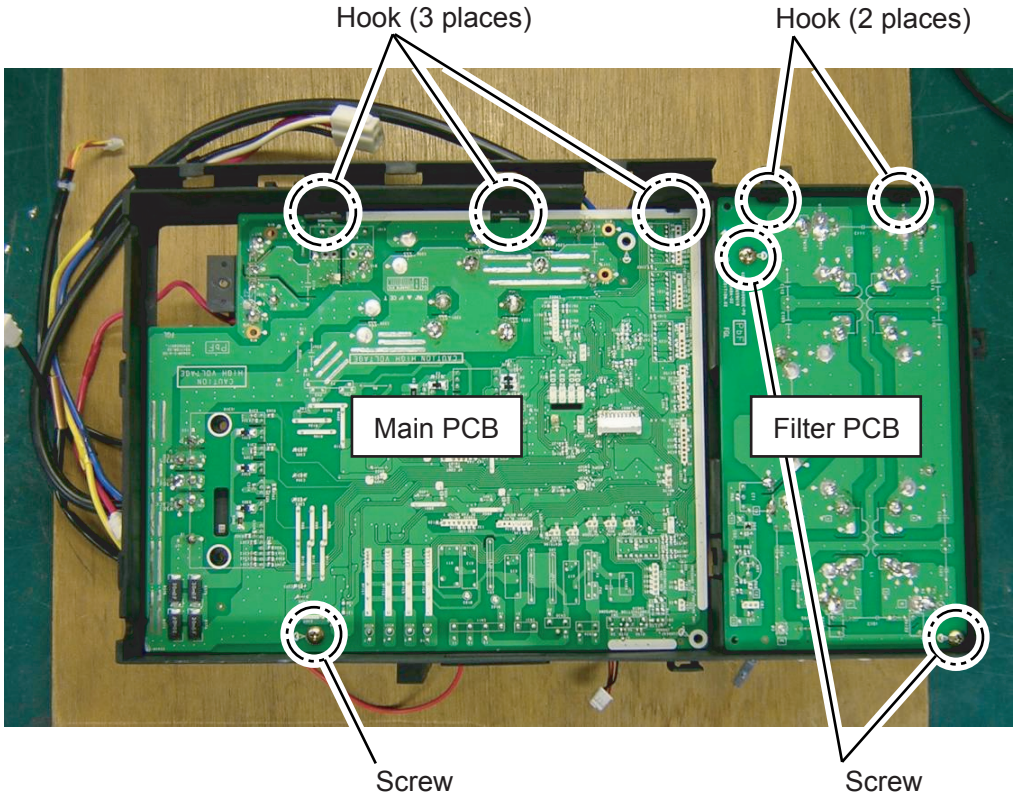
REAR VIEW



LEFT SIDE VIEW

Main PCB
- Remove the 1 mounting screw.
- Remove the Main PCB upward.

Filter PCB
- Remove the 2 mounting screws.
- Remove the Filter PCB upward.



1-2-4 ASSEMBLY PROCESS of INVERTER UNIT (For AO*30LMAW4)

1. FILTER PCB

- As shown in Fig.1, assemble FILTER PCB to INVERTER BOX A.
- As shown in Fig.2, pull out the wires of FILTER PCB.

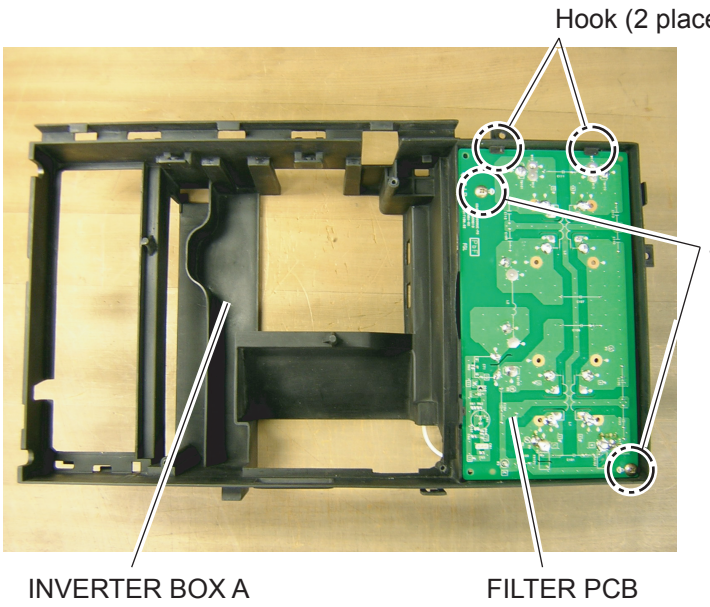


Fig.1

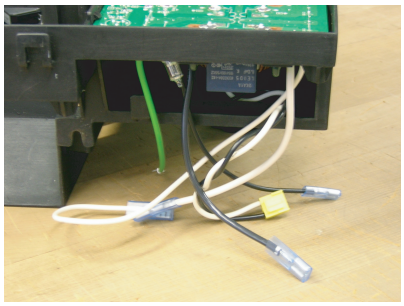


Fig.2

2. MAIN PCB

- As shown in Fig.3, temporarily fix MAIN PCB to INVERTER BOX A.
- After it is temporary fix of MAIN PCB, As shown in the Fig 4 - 7, pull out the wires of MAIN PCB.

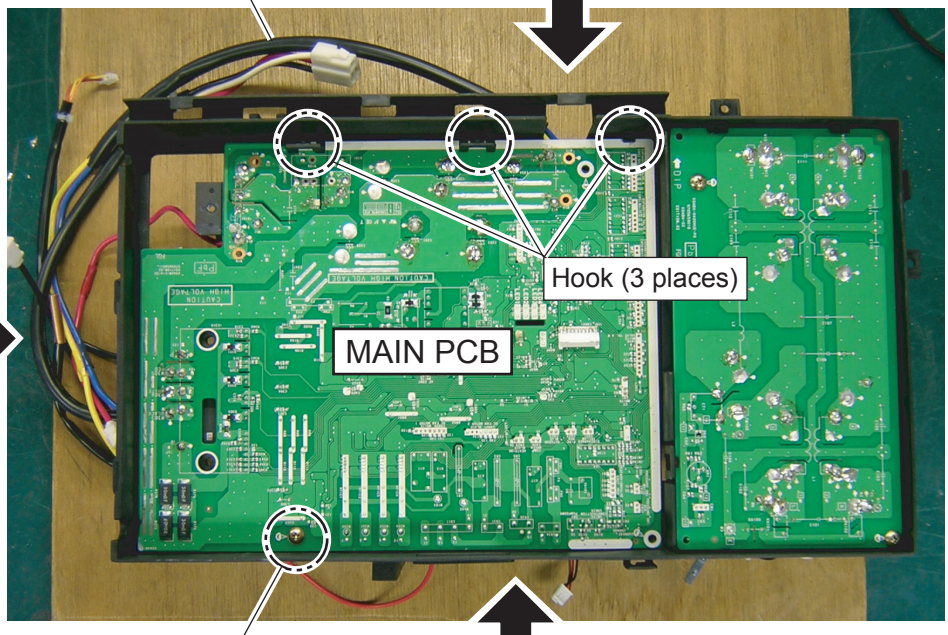


Fig.5

Fig.4

Fig.3

Fig.6/ 7

▪ As shown in Fig.4, pull out the wires.

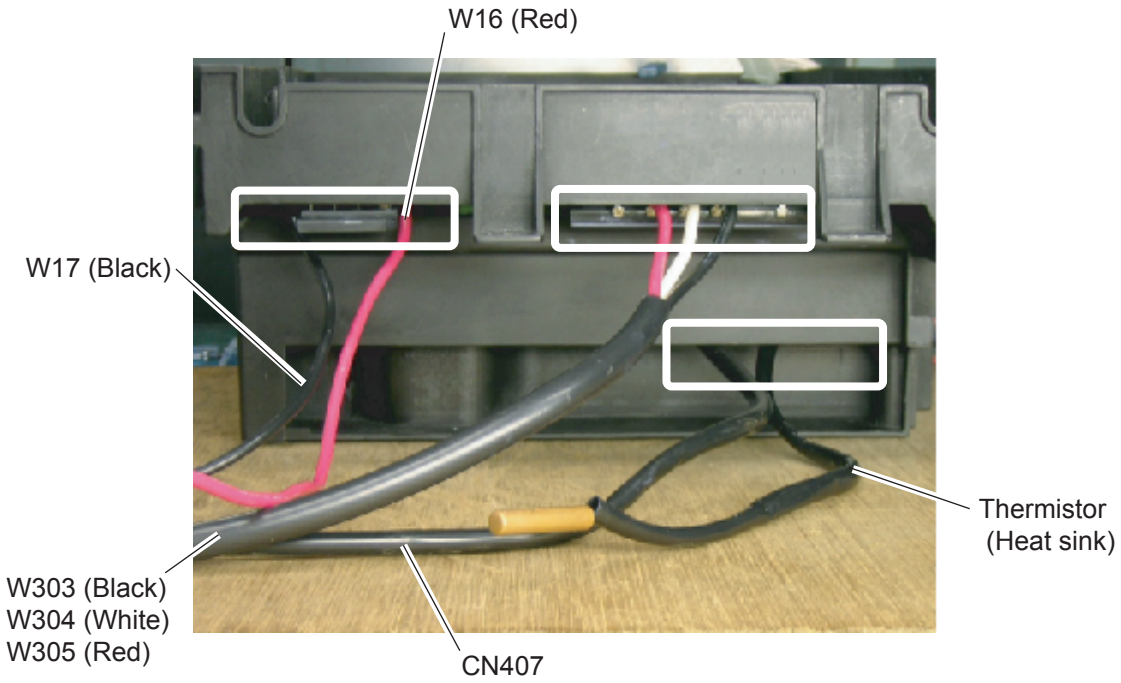


Fig. 4

▪ As shown in Fig.5, pull out the wires and fix them.

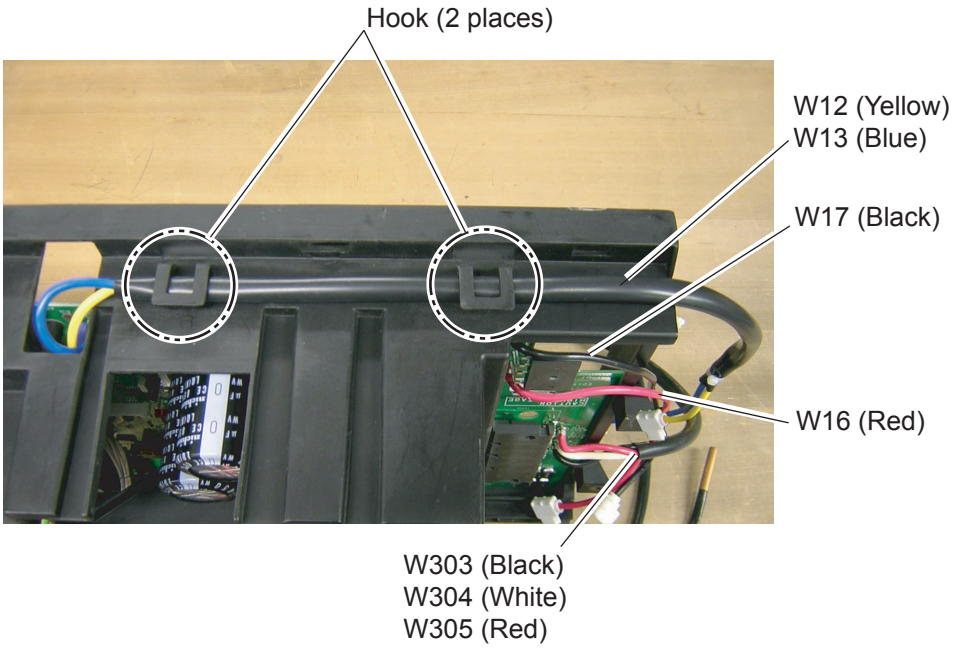


Fig. 5

▪ As shown in Fig.6, pull out the wires.

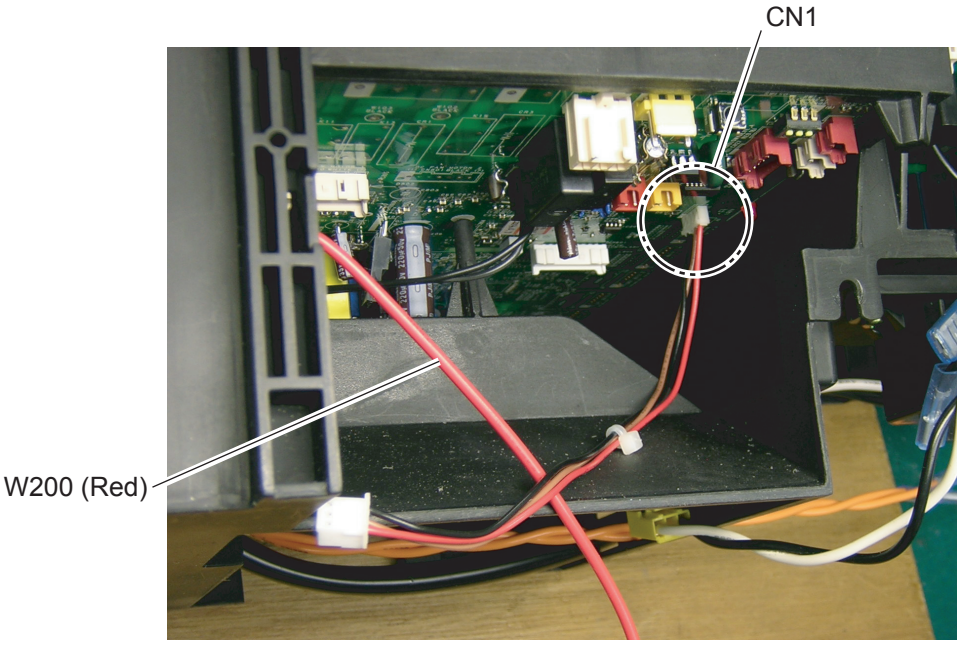


Fig. 6

▪ As shown in Fig.7, pull out the wires.

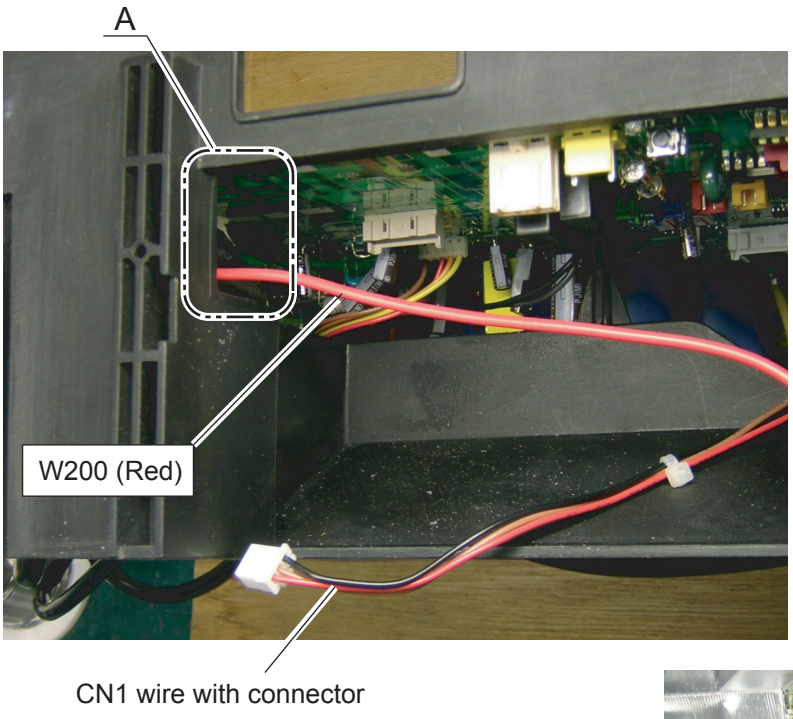
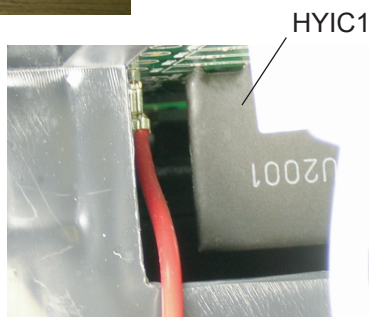


Fig. 7



Don't come in contact with HYIC1.

DETAIL - A

▪ As shown in Fig.8, connect wires.

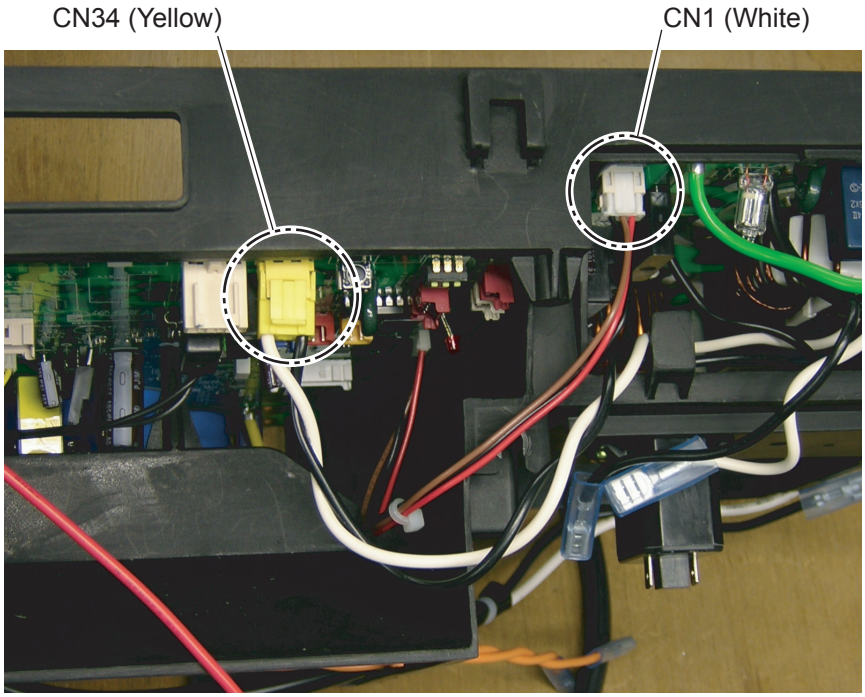


Fig. 8

▪ As shown in Fig.9, connect wires.

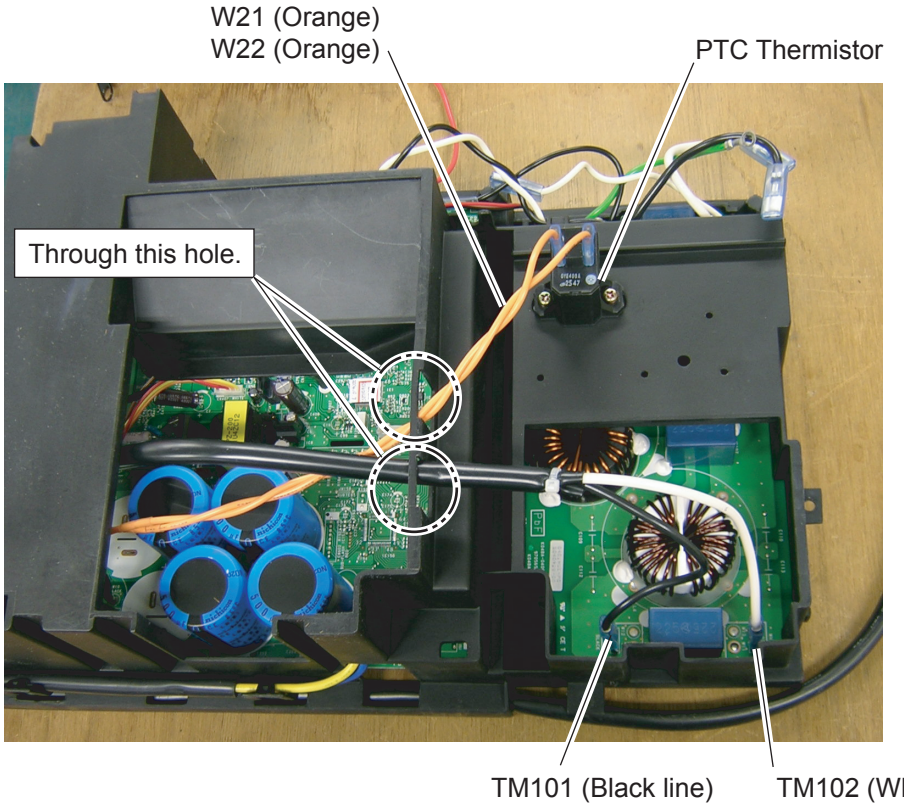


Fig. 9

▪ As shown in Fig.10, fix the wire to INVERTER BOX A.

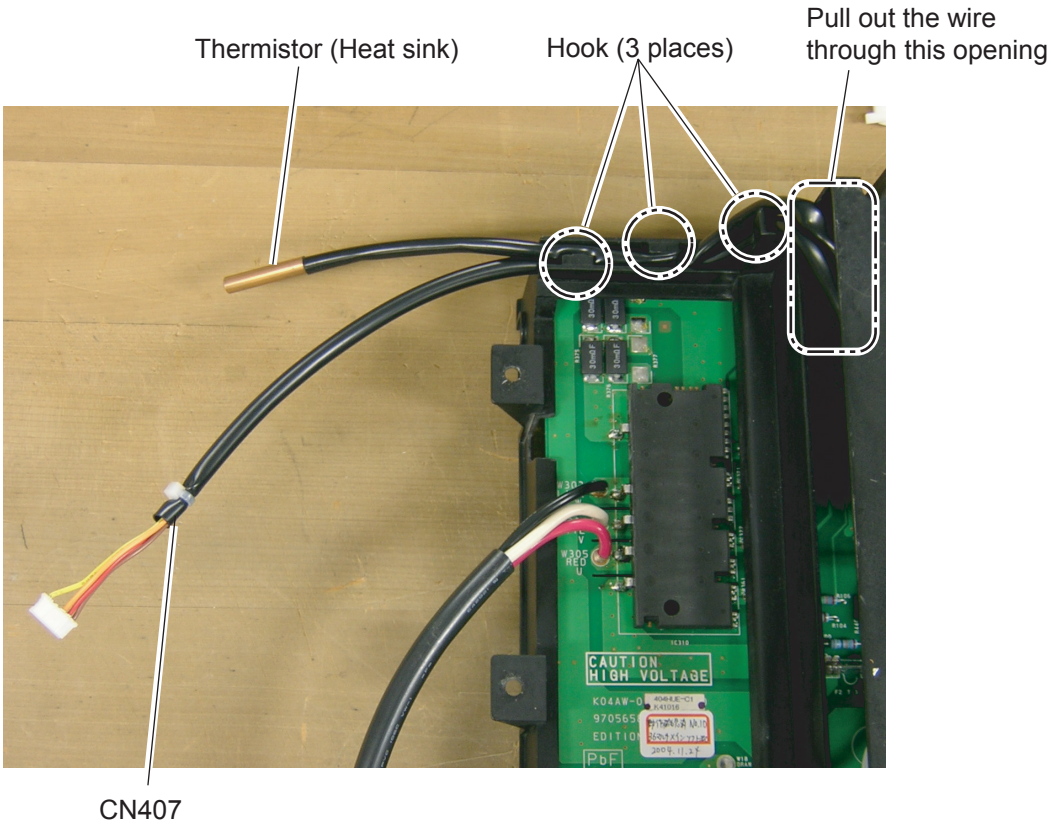


Fig. 10

▪ As shown in the figures, set wire with connector and bind it to INVERTER BOX A.

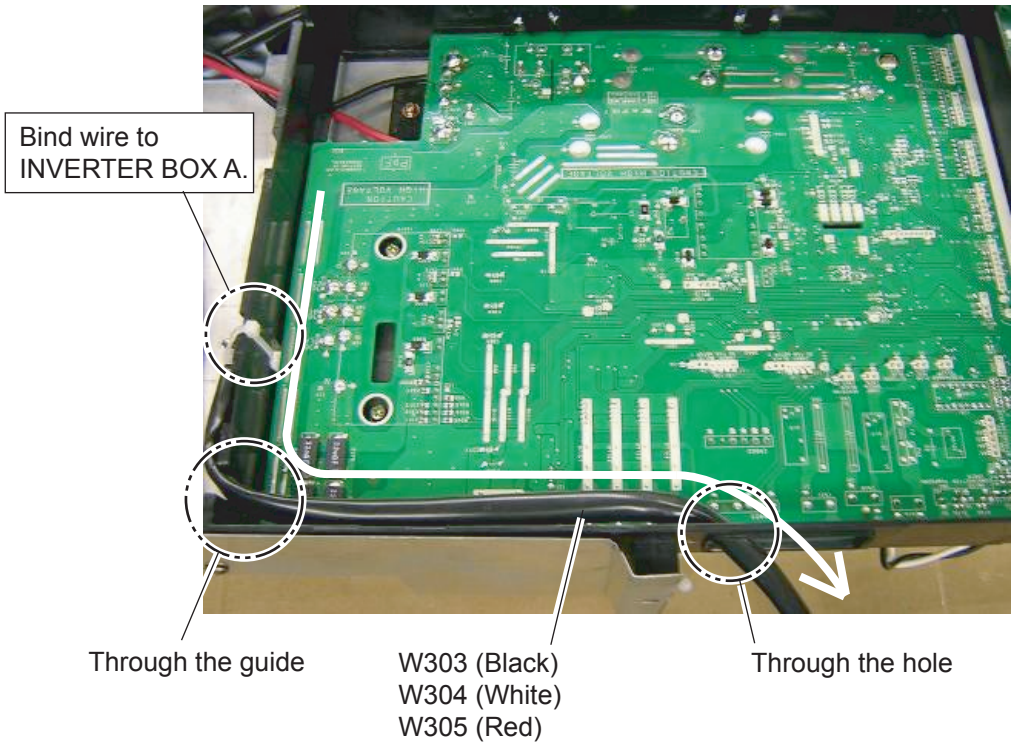
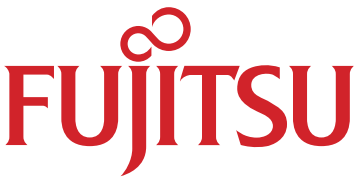


Fig. 11



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