TOSHIBA
Carrier

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SERVICE MANUAL

AIR-CONDITIONER
(MULTI TYPE)

<Floor Console Exposed Type>

MML-AP0074H2UL
MML-AP0094H2UL
MML-AP0124H2UL
MML-AP0154H2UL
MML-AP0184H2UL
MML-AP0244H2UL

<Floor Console Recessed Type>

MML-AP0074BH2UL
MML-AP0094BH2UL
MML-AP0124BH2UL
MML-AP0154BH2UL
MML-AP0184BH2UL
MML-AP0244BH2UL

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SAFETY CAUTION

The important contents concerned to the safety are described on the product itself and on this Service Manual. Please read this Service Manual and understand the described items thoroughly in the following contents (Indications/Illustrated marks), and keep the manual for reference. The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

[Explanation of indications]

Indication	Explanation
⚠ DANGER	Indicates that an imminent danger causing a death or serious injury of the repair engineers and the third parties may occur when an incorrect work has been executed.
⚠ WARNING	Indicates possibilities of a danger causing death or serious injury of the repair engineers, the third parties, and the users due to problems from the product after installation when an incorrect work has been executed.
⚠ CAUTION	Indicates that an injury or property damage (∗) may be caused to the repair engineers, the third parties involved, and the users due to troubles of the product after installation when an incorrect work has been executed.

∗ Property damage : Enlarged damage concerned with property, furniture, and domestic animal/pet

[Explanation of illustrated marks]

Mark	Explanation
	Indicates prohibited items (Forbidden to do) The sentences near an illustrated mark describe the concrete prohibited contents.
	Indicates mandatory items (Compulsory to do) The sentences near an illustrated mark describe the concrete mandatory contents.
	Indicates cautions (Including danger/warning) The sentences or illustration near or in an illustrated mark describe the concrete cautious contents.

[Confirmation of warning label on the main unit]

Confirm that labels are indicated on the specified positions
(Refer to the Parts disassembly diagram (Outdoor unit).)
If removing the label when parts are being replaced, stick it back on the original location.

⚠ DANGER	
 Turn off breaker.	**Turn "OFF" the breaker before removing the front panel and cabinet, otherwise an electric shock is caused by high voltage which may result in death or injury.** During operation, a high voltage with 400V or higher of circuit (∗) at secondary circuit of the high-voltage transformer is applied. If touching a high voltage with the naked hands or body, an electric shock is caused even if using an electric insulator. ∗ : For details, refer to the electric wiring diagram.
 Execute discharge between terminals.	**When removing the front panel or cabinet, execute short-circuit and discharge between high-voltage capacitor terminals.** If discharge is not executed, an electric shock is caused by high voltage which could result in death or injury. After turning off the breaker, high voltage is kept on the high-voltage capacitor.
 Prohibition	**Do not turn on the breaker under condition that the front panel and cabinet are removed.** An electric shock is caused by high voltage which could result in death or injury.

⚠ WARNING	
 Check ground wires.	**Before troubleshooting or repair work, check the ground wire is connected to the ground terminals of the main unit, otherwise an electric shock is caused when a leak occurs.** If the ground wire is not correctly connected, contact an electrician for rework.
 Prohibition of modification.	**Do not modify the products.** Do not also disassemble or modify the parts. It may cause a fire, electric shock or injury.
 Use specified parts.	**For spare parts, use those specified (∗).** If unspecified parts are used, a fire or electric shock may be caused. ∗: For details, refer to the parts list.
 Do not bring a child close to the equipment.	**Before troubleshooting or repair work, do not bring a third party (a child, etc.) except the repair engineers close to the equipment.** It causes an injury with tools or disassembled parts. Please inform the users so that the third party (a child, etc.) does not approach the equipment.
 Insulating measures	**Connect the cut-off lead wires with crimp contact, etc, put the closed end side upward and then apply a water-cut method, otherwise a leak or fire is caused at the users' side.**
 No fire	**When repairing the refrigeration cycle, take the following measures.** 1) Be attentive to fire around the cycle. When using a gas stove, etc, be sure to put out fire before work; otherwise the oil mixed with refrigerant gas may catch fire. 2) Do not use a welder in the closed room. When using it without ventilation, carbon monoxide poisoning may be caused. 3) Do not bring inflammables close to the refrigerant cycle, otherwise fire of the welder may catch the inflammables.
 Refrigerant	**Check the used refrigerant name and use tools and materials of the parts which match with it.** For the products which use R410A refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see. To prevent miss-charging, the route of the service port is changed from one of the former R22. **Do not use any refrigerant different from the one specified for complement or replacement.** Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body. **For an air conditioner which uses R410A, never use other refrigerant than R410A.** **For an air conditioner which uses other refrigerant (R22, etc.), never use R410A.** If different types of refrigerant are mixed, abnormal high pressure generates in the refrigeration cycle and an injury due to breakage may be caused. **Do not charge additional refrigerant.** If charging additional refrigerant when refrigerant gas leaks, the refrigerant composition in the refrigerating cycle changes results in change of air conditioner characteristics or refrigerant over the specified standard amount is charged and an abnormal high pressure is applied to the inside of the refrigerating cycle resulted in cause of breakage or injury. Therefore if the refrigerant gas leaks, recover the refrigerant in the air conditioner, execute vacuuming, and then newly recharge the specified amount of liquid refrigerant. In this time, never charge the refrigerant over the specified amount. **When recharging the refrigerant in the refrigerating cycle, do not mix the refrigerant or air other than R410A into the specified refrigerant.** If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle resulted in cause of injury due to breakage. **After installation work, check the refrigerant gas does not leak.** If the refrigerant gas leaks in the room, poisonous gas generates when gas touches fire such as fan heater, stove or cocking stove though the refrigerant gas itself is innocuous. **Never recover the refrigerant into the outdoor unit.** When the equipment is moved or repaired, be sure to recover the refrigerant with recovering device. The refrigerant cannot be recovered in the outdoor unit; otherwise a serious accident such as breakage or injury is caused.
 Assembly/Cabling	**After repair work, assemble the disassembled parts, and connect and lead the removed wires as before. Perform the work so that the cabinet or panel does not catch the inner wires.** If incorrect assembly or incorrect wire connection was done, a disaster such as a leak or fire is caused at user's side.

⚠ WARNING	
 Insulator check	**After the work has finished, be sure to use an insulation tester set (500V Megger) to check the resistance is 2MΩ or more between the charge section and the non-charge metal section (Ground position).** If the resistance value is low, a disaster such as a leak or electric shock is caused at user's side.
 Ventilation	**When the refrigerant gas leaks during work, execute ventilation.** If the refrigerant gas touches a fire, poisonous gas generates. A case of leakage of the refrigerant and the closed room full with gas is dangerous because a shortage of oxygen occurs. Be sure to execute ventilation.
 Be attentive to electric shock	**When checking the circuit with the power-ON, use rubber gloves and do not touch the charging section.** If touching to the charging section, an electric shock may be caused. **When you access inside of the service panel to repair electric parts, wait for about five minutes after turning off the breaker. Do not start repairing immediately.** Otherwise you may get electric shock by touching terminals of high-voltage capacitors. Natural discharge of the capacitor takes about five minutes.
 Compulsion	**When the refrigerant gas leaks, find the leaked position and repair it.** If the leaked position cannot be found and the repair work is interrupted, pump-down and tighten the service valve, otherwise the refrigerant gas may leak into the room. The poisonous gas generates when gas touches fire such as fan heater, stove or cocking stove though the refrigerant gas itself is innocuous. **When installing equipment which includes a large amount of charged refrigerant such as a multi air conditioner in a sub-room, it is necessary that the density does not the limit even if the refrigerant leaks.** If the refrigerant leaks and exceeds the limit density, an accident of shortage of oxygen is caused. **For the installation/moving/reinstallation work, follow to the Installation Manual.** If an incorrect installation is done, a trouble on the refrigerating cycle, water leak, electric shock or fire is caused.
 Check after repair	**After repair work has been finished, check there is no trouble.** If check is not executed, a fire, electric shock or injury may be caused. For a check, turn off the power breaker.
 Check after reinstallation	**After repair work (installation of front panel and cabinet) has finished, execute a test run to check there is no generation of smoke or abnormal sound.** If check is not executed, a fire or an electric shock is caused. Before test run, install the front panel and cabinet.
	Check the following items after reinstallation. 1) The ground wire is correctly connected. 2) The power cord is not caught in the product. 3) There is no inclination or unsteadiness and the installation is stable.

⚠ CAUTION	
 Put on gloves	**Be sure to put on the gloves (*) and a long sleeved shirt: otherwise an injury may be caused with the parts, etc.** (*) Heavy gloves such as work gloves
 Cooling check	**When the power is turned on, start to work after the equipment has been sufficiently cooled.** As temperature of the compressor pipes and others became high due to cooling/heating operation, a burn may be caused.

• Refrigerant (R410A)

This air conditioner adopts a HFC type refrigerant (R410A) which does not deplete the ozone layer.

1. Safety Caution Concerned to Refrigerant (R410A)

The pressure of R410A is high 1.6 times of that of the previous refrigerant (R22).
Accompanied with change of refrigerant, the refrigerating oil has been also changed.
Therefore, be sure that water, dust, the previous refrigerant or the previous refrigerating oil is not mixed into the refrigerating cycle of the air conditioner with refrigerant (R410A) installation work or service work.
If an incorrect work or incorrect service is performed, there is a possibility of a serious accident.
Use the tools and materials exclusive to R410A to ensure a safe work.

2. Cautions on Installation/Service

1) Do not mix other refrigerant or refrigerating oil.
   For the tools exclusive to R410A, shapes of all the joints including the service port differ from those of the previous refrigerant in order to prevent mixture of them.
2) As the use pressure of the refrigerant (R410A) is high, use material thickness of the pipe and tools which are specified for R410A.
3) In the installation time, use clean pipe materials and work with great attention so that water and others do not mix in because pipes are affected by impurities such as water, oxide scales, oil, etc.
   Use clean pipes.
   Be sure to braze with flowing nitrogen gas. (Never use any other gas except for nitrogen.)
4) For the ground protection, use a vacuum pump for air purge.
5) R410A refrigerant is azeotropic mixture type refrigerant.
   Therefore use liquid type to charge the refrigerant. (If using gas for charging, composition of the refrigerant changes and then characteristics of the air conditioner change.)

3. Pipe Materials

For the refrigerant pipes, copper pipe and joints are mainly used.
It is necessary to select the most appropriate pipes to conform to the standard.
Use clean material in which impurities adhere inside of pipe or joint is minimal.

1) Copper pipe

<Piping>
The pipe thickness, flare finishing size, flare nut and others differ according to a refrigerant type.
When using a long copper pipe for R410A, it is recommended to select “Copper or copper-base pipe without seam” and one with bonded oil amount 0.0001 lbs / 32’ 10” (40mg / 10m) or less.
Also do not use crushed, deformed, discolored (especially inside) pipes.
(Impurities cause clogging of expansion valves and capillary tubes.)

<Flare nut>
Use the flare nuts which are attached to the air conditioner unit.

2) Joint

The flare joint and socket joint are used for joints of the copper pipe.
The joints are rarely used for installation of the air conditioner. However clear impurities when using them.

4. Tools

1. Required Tools for R410A

Mixing of different types of oil may cause a trouble such as generation of sludge, clogging of capillary, etc. Accordingly, the tools to be used are classified into the following three types.

1) Tools exclusive for R410A (Those which cannot be used for conventional refrigerant (R22))
2) Tools exclusive for R410A, but can be also used for conventional refrigerant (R22)
3) Tools commonly used for R410A and for conventional refrigerant (R22)

The table below shows the tools exclusive for R410A and their interchangeability.

Tools exclusive for R410A (The following tools for R410A are required.)

Tools whose specifications are changed for R410A and their interchangeability

No.	Used tool	Usage	R410A air conditioner installation		Conventional air conditioner installation
			Existence of new equipment for R410A	Whether conventional equipment can be used	Whether conventional equipment can be used
①	Flare tool	Pipe flaring	Yes	*(Note)	Yes
②	Copper pipe gauge for adjusting projection margin	Flaring by conventional flare tool	Yes	*(Note)	*(Note)
③	Torque wrench	Tightening of flare nut	Yes	No	No
④	Gauge manifold	Evacuating, refrigerant charge, run check, etc.	Yes	No	No
⑤	Charge hose				
⑥	Vacuum pump adapter	Vacuum evacuating	Yes	No	Yes
⑦	Electronic balance for refrigerant charging	Refrigerant charge	Yes	Yes	Yes
⑧	Refrigerant cylinder	Refrigerant charge	Yes	No	No
⑨	Leakage detector	Gas leakage check	Yes	No	Yes

(Note) When flaring is carried out for R410A using the conventional flare tools, adjustment of projection margin is necessary. For this adjustment, a copper pipe gauge, etc. are necessary.

General tools (Conventional tools can be used.)

In addition to the above exclusive tools, the following equipments which serve also for R22 are necessary as the general tools.

1) Vacuum pump. Use vacuum pump by attaching vacuum pump adapter.
2) Torque wrench
3) Pipe cutter
4) Reamer
5) Pipe bender
6) Level vial
7) Screwdriver (+, –)
8) Spanner or Monkey wrench
9) Hole core drill
10) Hexagon wrench (Opposite side 4mm)
11) Tape measure
12) Metal saw

Also prepare the following equipments for other installation method and run check.

1) Clamp meter
2) Thermometer
3) Insulation resistance tester (Megger)
4) Electroscope

1. SPECIFICATIONS

1-1. Floor console exposed Type

Model name				MML-	AP0074H2UL	AP0094H2UL	AP0124H2UL	AP0154H2UL
Cooling capacity				kBtu/h	7.5	9.5	12.0	15.4
Heating Capacity				kBtu/h	8.5	10.5	13.5	17.0
Electrical charastaristics	Power supply				230V(208V/230V) 1phase 60Hz			
	Power consumption		208V	kW	0.049	0.049	0.080	0.080
			230V	kW	0.058	0.058	0.093	0.093
Appearance					Silky shade(Munsell 1Y8.5/0.5)			
Dimension	Unit	Height		In	24.8	24.8	24.8	24.8
		Width		In	37.4	37.4	37.4	37.4
		Depth		In	9.1	9.1	9.1	9.1
	Packing	Height		In	29.0	29.0	29.0	29.0
		Width		In	41.3	41.3	41.3	41.3
		Depth		In	12.9	12.9	12.9	12.9
Total weight	Unit			lbs	81.6	81.6	81.6	81.6
	Packing			lbs	88.2	88.2	88.2	88.2
Heat exchanger					Finned tube			
Fan unit	Fan				Centrifugal fan			
	Standard air flow(High/Mid/Low)			cfm	280 / 250 / 210	280 / 250 / 210	530 / 460 / 380	530 / 460 / 380
	Motor			W	19	19	45	45
Connecting pipe	Gas side			In	3/8"	3/8"	3/8"	1/2"
	Liquid side			In	1/4"	1/4"	1/4"	1/4"
	Drain port (Nominal dia. mm)				20(Polyvinyl chloride tube)			
Sound puressure level (High/Mid./Lov (*1)			208V	dB(A)	39 / 38 / 35	39 / 38 / 35	47 / 44 / 40	47 / 44 / 40
			230V	dB(A)	42 / 40 / 38	42 / 40 / 38	50 / 46 / 42	50 / 46 / 42

Model name				MML-	AP0184H2UL	AP0244H2UL
Cooling capacity				kBtu/h	18.0	24.0
Heating Capacity				kBtu/h	20.0	27.0
Electrical charastaristics	Power supply				230V(208V/230V) 1phase 60Hz	
	Power consumption		208V	kW	0.098	0.098
			230V	kW	0.113	0.113
Appearance					Silky shade(Munsell 1Y8.5/0.5)	
Dimension	Unit	Height		In	24.8	24.8
		Width		In	37.4	37.4
		Depth		In	9.1	9.1
	Packing	Height		In	29.0	29.0
		Width		In	41.3	41.3
		Depth		In	12.9	12.9
Total weight	Unit			lbs	88.2	88.2
	Packing			lbs	94.8	94.8
Heat exchanger					Finned tube	
Fan unit	Fan				Centrifugal fan	
	Standard air flow(High/Mid/Low)			cfm	640 / 550 / 460	640 / 550 / 460
	Motor			W	70	70
Connecting pipe	Gas side			In	1/2"	5/8"
	Liquid side			In	1/4"	3/8"
	Drain port (Nominal dia. mm)				20(Polyvinyl chloride tube)	
Sound puressure level (High/Mid./Lov (*1)			208V	dB(A)	51 / 46 / 41	51 / 46 / 41
			230V	dB(A)	53 / 48 / 43	53 / 48 / 43

Note

(*1) The actual value s in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

1-2. Floor console recessed Type

Model name				MML-	AP0074BH2UL	AP0094BH2UL	AP0124BH2UL	AP0154BH2UL
Cooling capacity				kBtu/h	7.5	9.5	12.0	15.4
Heating Capacity				kBtu/h	8.5	10.5	13.5	17.0
Electrical charastaristics	Power supply				230V(208V/230V) 1phase 60Hz			
	Power consumption		208V	kW	0.047	0.047	0.047	0.095
			230V	kW	0.056	0.056	0.056	0.114
Appearance					Zinc hot dipping steel plate			
Dimension	Unit	Height		In	23.6	23.6	23.6	23.6
		Width		In	29.3	29.3	29.3	41.1
		Depth		In	8.7	8.7	8.7	8.7
	Packing	Height		In	26.9	26.9	26.9	26.9
		Width		In	31.9	31.9	31.9	43.7
		Depth		In	10.8	10.8	10.8	10.8
Total weight	Unit			lbs	50.7	50.7	50.7	68.3
	Packing			lbs	57.3	57.3	57.3	75.0
Heat exchanger					Finned tube			
Fan unit	Fan				Centrifugal fan			
	Standard air flow(High/Mid/Low)			cfm	270 / 240 / 180	270 / 240 / 180	270 / 240 / 180	440 / 350 / 290
	Motor			W	19	19	19	70
Connecting pipe	Gas side			In	3/8"	3/8"	3/8"	1/2"
	Liquid side			In	1/4"	1/4"	1/4"	1/4"
	Drain port (Nominal dia. mm)				20(Polyvinyl chloride tube)			
Sound puressure level (High/Mid./Lo\ (*1)			208V	dB(A)	40 / 36 / 33	40 / 36 / 33	40 / 36 / 33	40 / 36 / 33
			230V	dB(A)	42 / 39 / 36	42 / 39 / 36	42 / 39 / 36	43 / 39 / 36

Model name				MML-	AP0184BH2UL	AP0244BH2UL
Cooling capacity				kBtu/h	18.0	24.0
Heating Capacity				kBtu/h	20.0	27.0
Electrical charastaristics	Power supply				230V(208V/230V) 1phase 60Hz	
	Power consumption		208V	kW	0.095	0.104
			230V	kW	0.114	0.120
Appearance					Zinc hot dipping steel plate	
Dimension	Unit	Height		In	23.6	23.6
		Width		In	41.1	41.1
		Depth		In	8.7	8.7
	Packing	Height		In	26.9	26.9
		Width		In	43.7	43.7
		Depth		In	10.8	10.8
Total weight	Unit			lbs	68.3	68.3
	Packing			lbs	75.0	75.0
Heat exchanger					Finned tube	
Fan unit	Fan				Centrifugal fan	
	Standard air flow(High/Mid/Low)			cfm	440 / 350 / 290	560 / 470 / 380
	Motor			W	70	70
Connecting pipe	Gas side			In	1/2"	5/8"
	Liquid side			In	1/4"	3/8"
	Drain port (Nominal dia. mm)				20(Polyvinyl chloride tube)	
Sound puressure level (High/Mid./Lo\ (*1)			208V	dB(A)	40 / 36 / 33	47 / 42 / 35
			230V	dB(A)	43 / 39 / 36	49 / 44 / 37

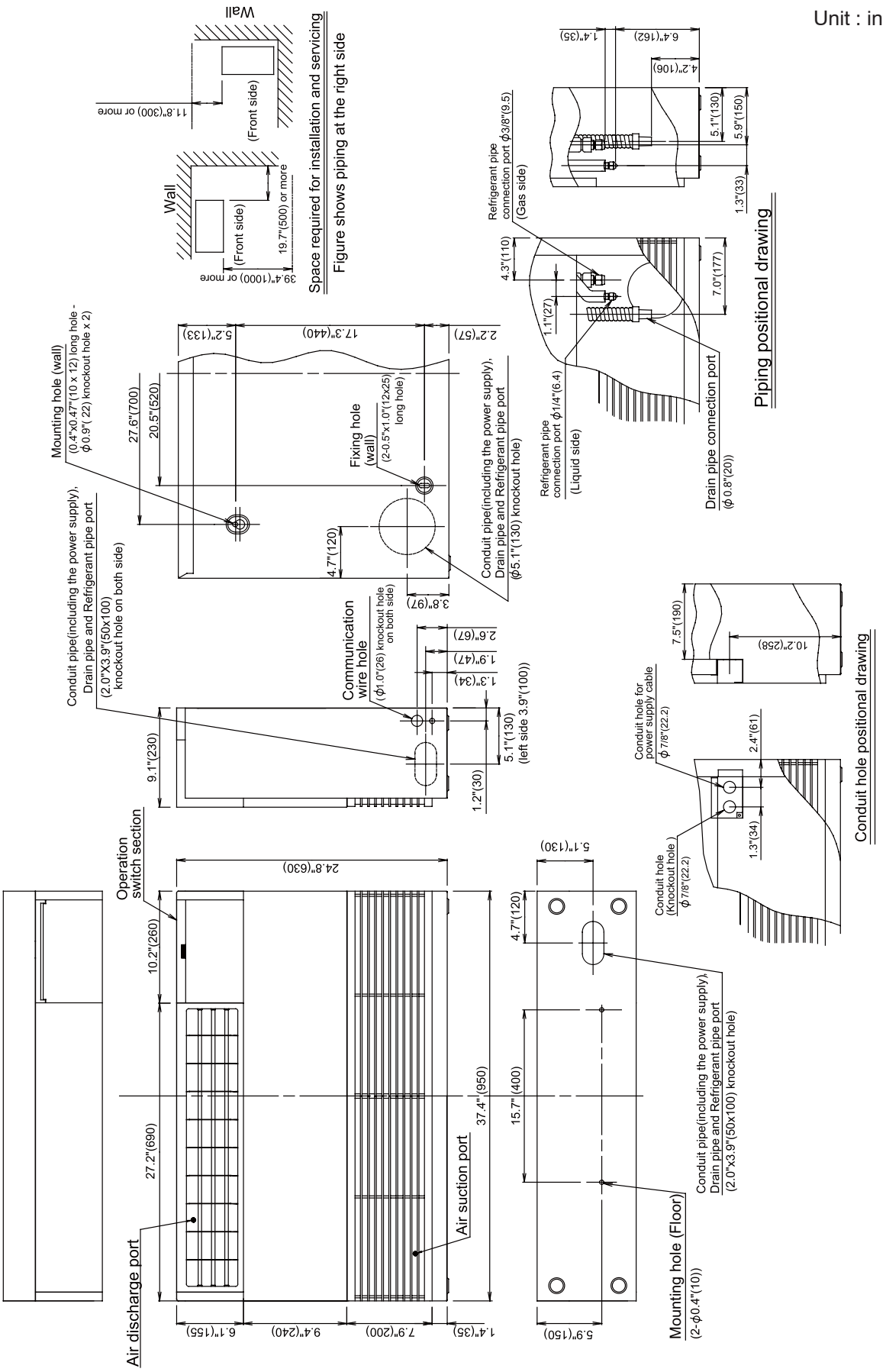
Note

(*1) The actual value s in an external operating environment are generally higher than the indicated values due to the contribution from ambient noise.

2. CONSTRUCTION VIEWS (EXTERNAL VIEWS)

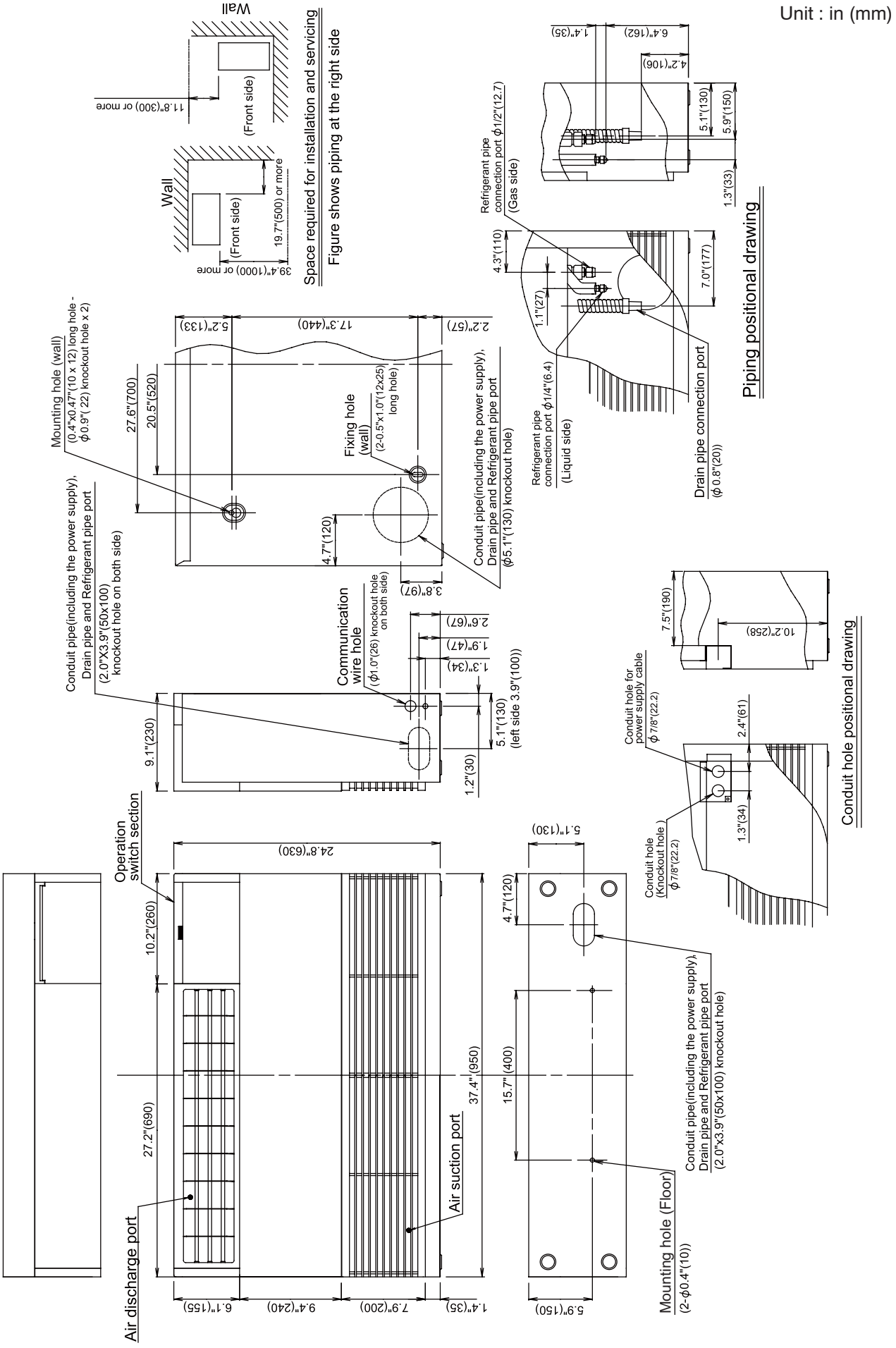
2-1. Floor Console Exposed Type
MML-AP0074H2UL, AP0094H2UL, AP0124H2UL

Unit : in (mm)



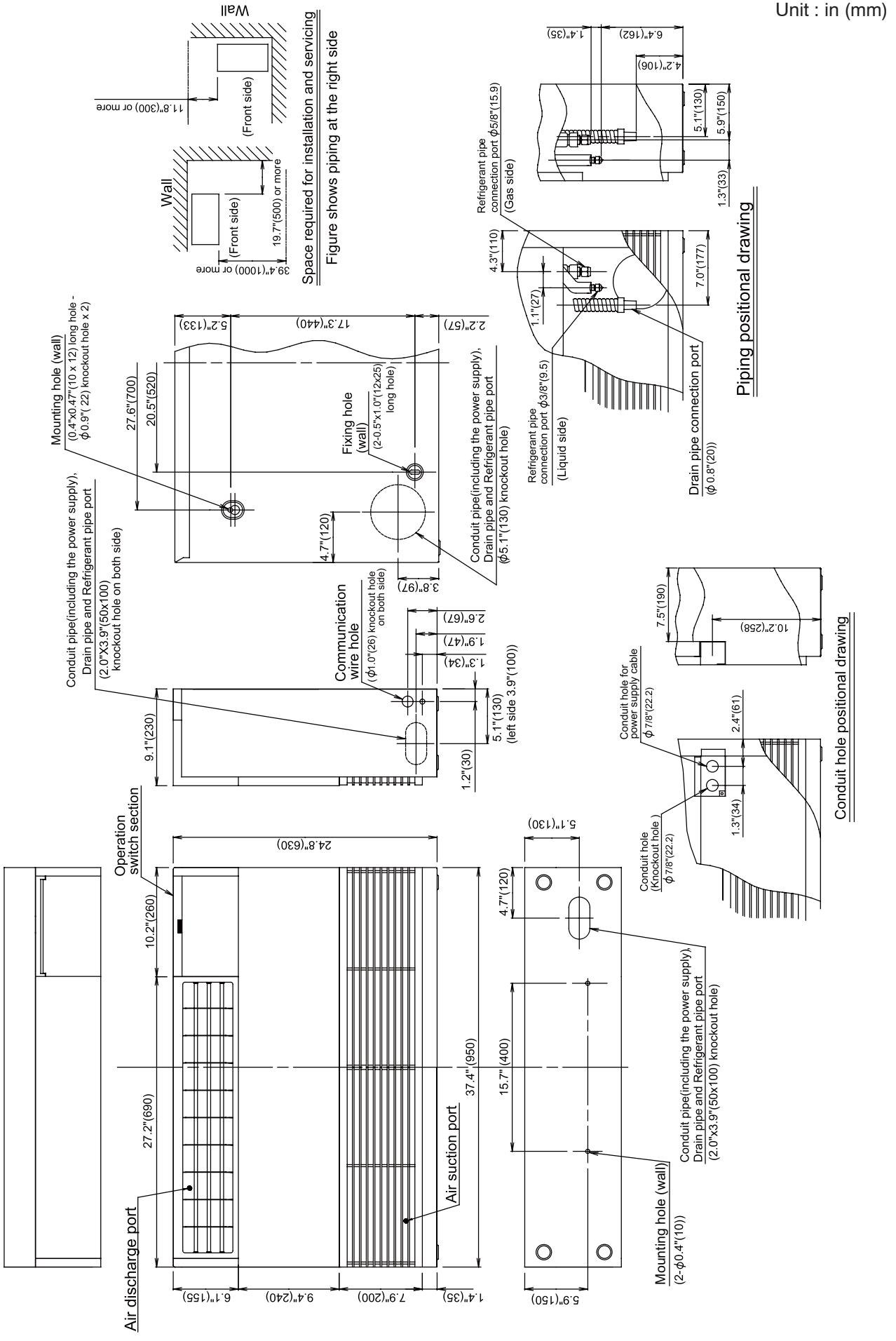
MML-AP0154H2UL, AP0184H2UL

Unit : in (mm)



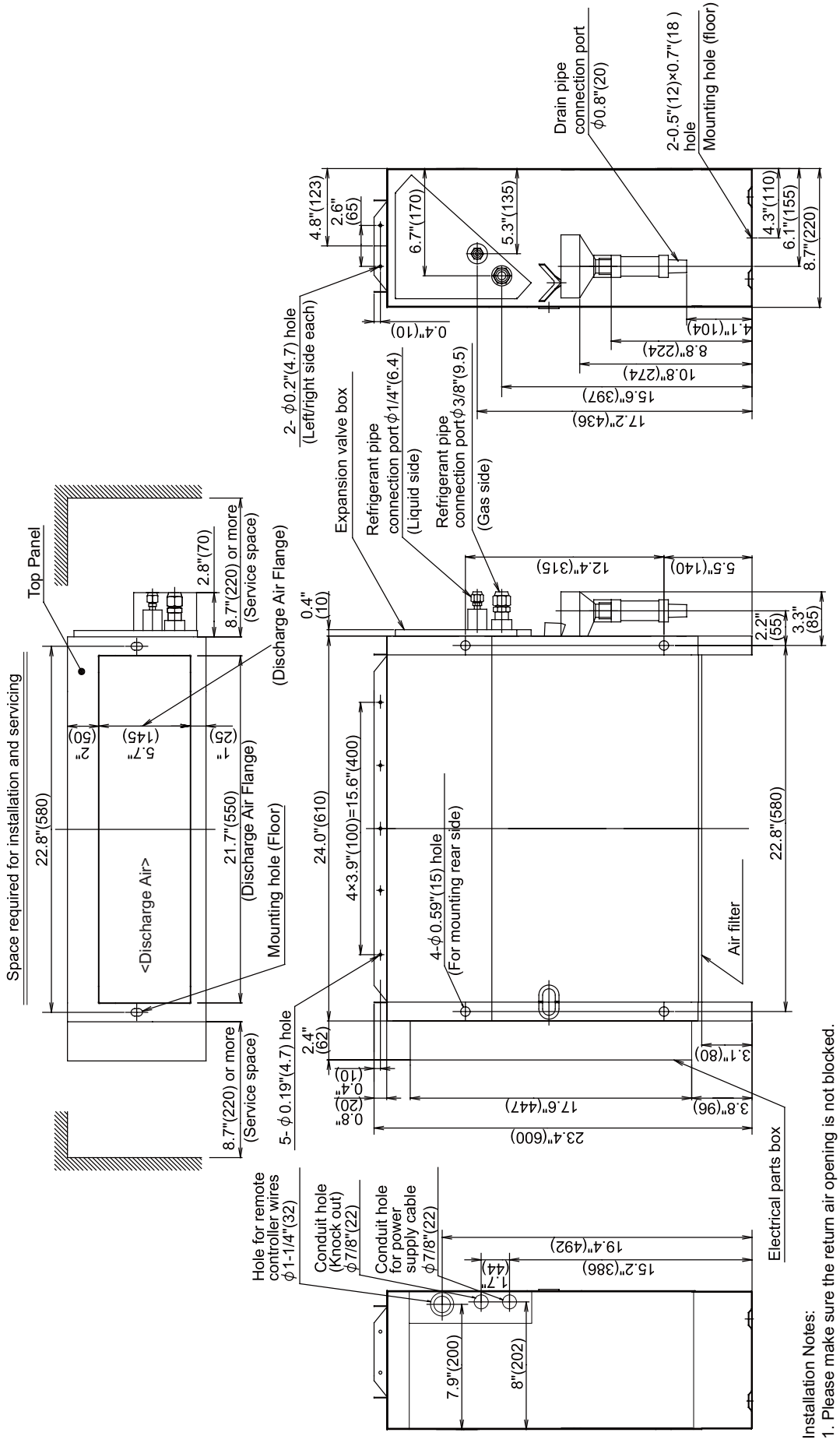
MML-AP0244H2UL

Unit : in (mm)



2-2. Floor Console Recessed Type
MML-AP0074BH2UL, AP0094BH2UL, AP0124BH2UL

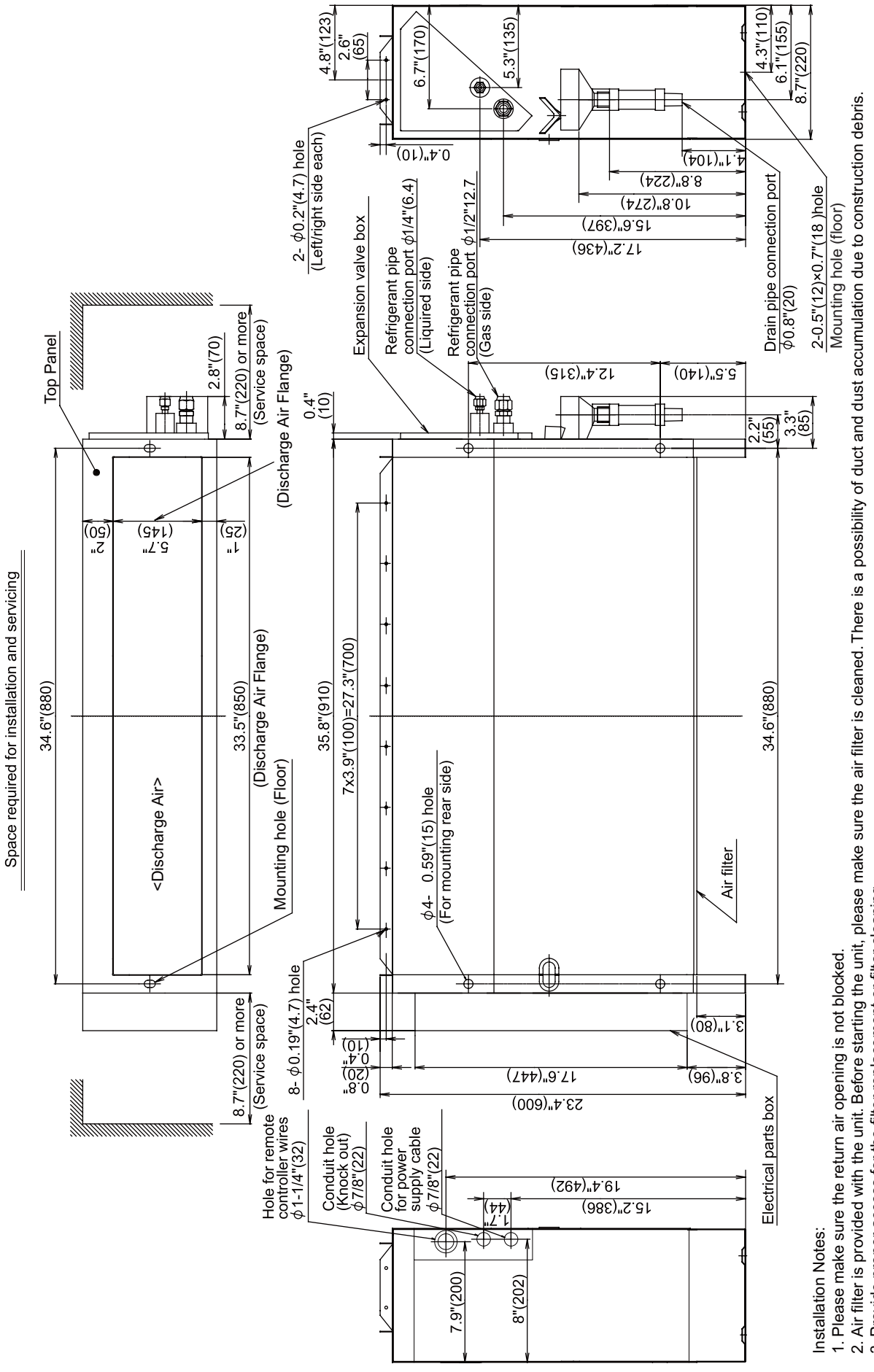
Unit : in (mm)



Installation Notes:
1. Please make sure the return air opening is not blocked.
2. Air filter is provided with the unit. Before starting the unit, please make sure the air filter is cleaned. There is a possibility of duct and dust accumulation due to construction debris.
3. Provide proper access for the filter replacement or filter cleaning.
4. Make sure the service switch is turned off before accessing any internal components of the unit which includes filter replacement.

MML-AP0154BH2UL, AP0184BH2UL

Unit : in (mm)

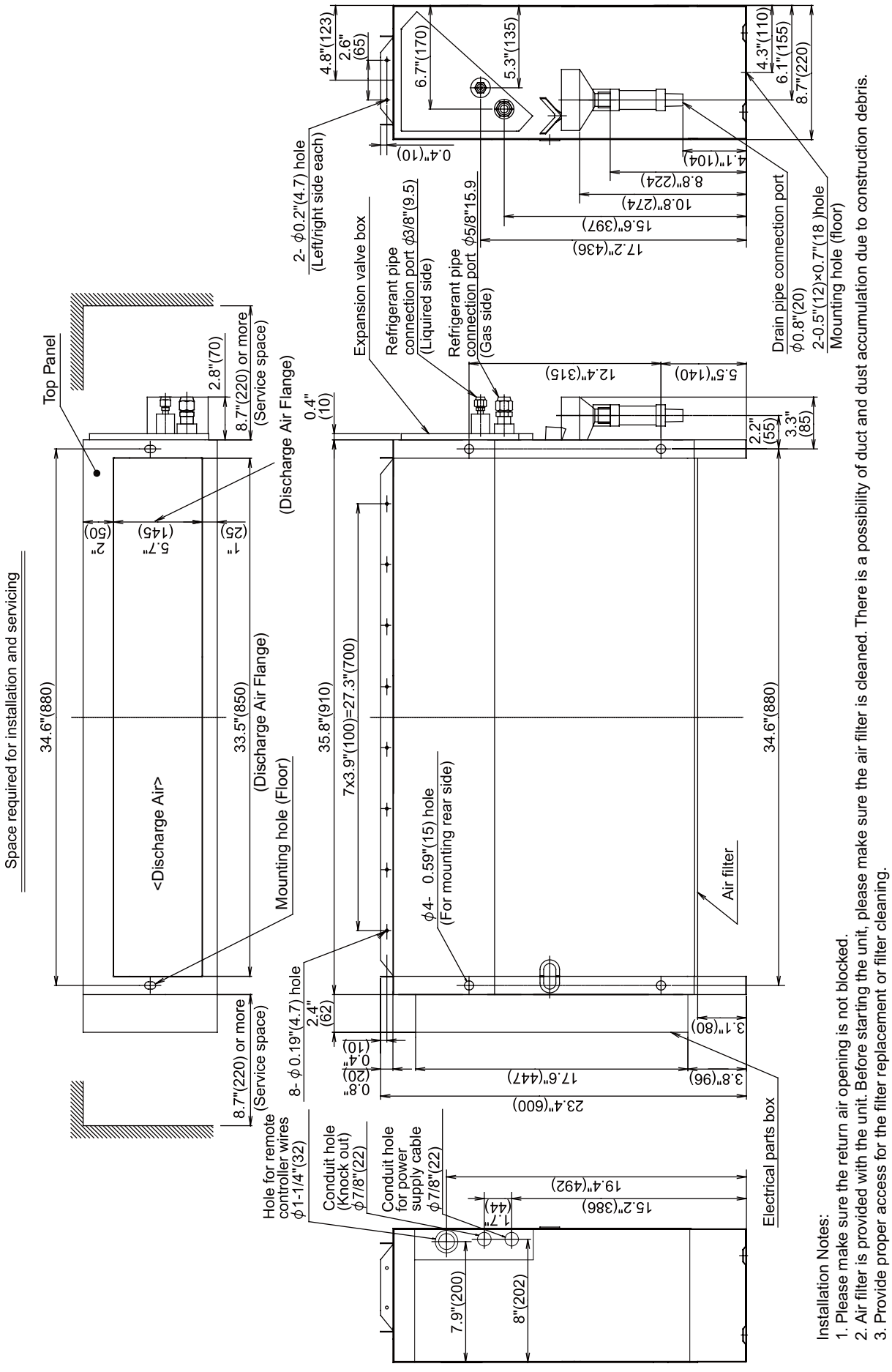


Installation Notes:

1. Please make sure the return air opening is not blocked.
2. Air filter is provided with the unit. Before starting the unit, please make sure the air filter is cleaned. There is a possibility of duct and dust accumulation due to construction debris.
3. Provide proper access for the filter replacement or filter cleaning.
4. Make sure the service switch is turned off before accessing any internal components of the unit which includes filter replacement.

MML-AP0244BH2UL

Unit : in (mm)

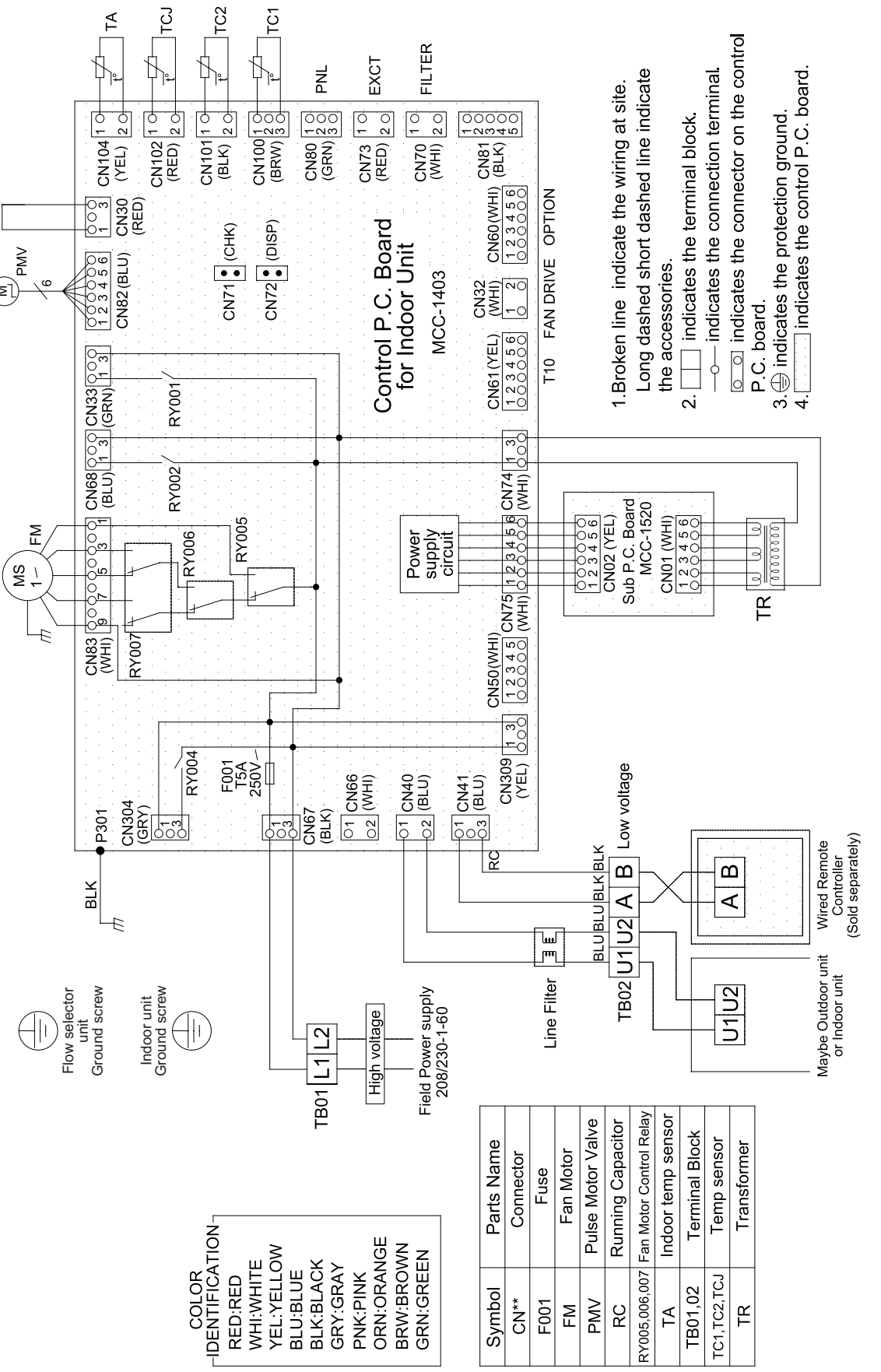


Installation Notes:
1. Please make sure the return air opening is not blocked.
2. Air filter is provided with the unit. Before starting the unit, please make sure the air filter is cleaned. There is a possibility of duct and dust accumulation due to construction debris.
3. Provide proper access for the filter replacement or filter cleaning.
4. Make sure the service switch is turned off before accessing any internal components of the unit which includes filter replacement.

3. WIRING DIAGRAM

3-1. Floor Console Exposed Type

MML-AP0074H2UL, AP0094H2UL, AP0124H2UL, AP0154H2UL, AP0184H2UL, AP0244H2UL

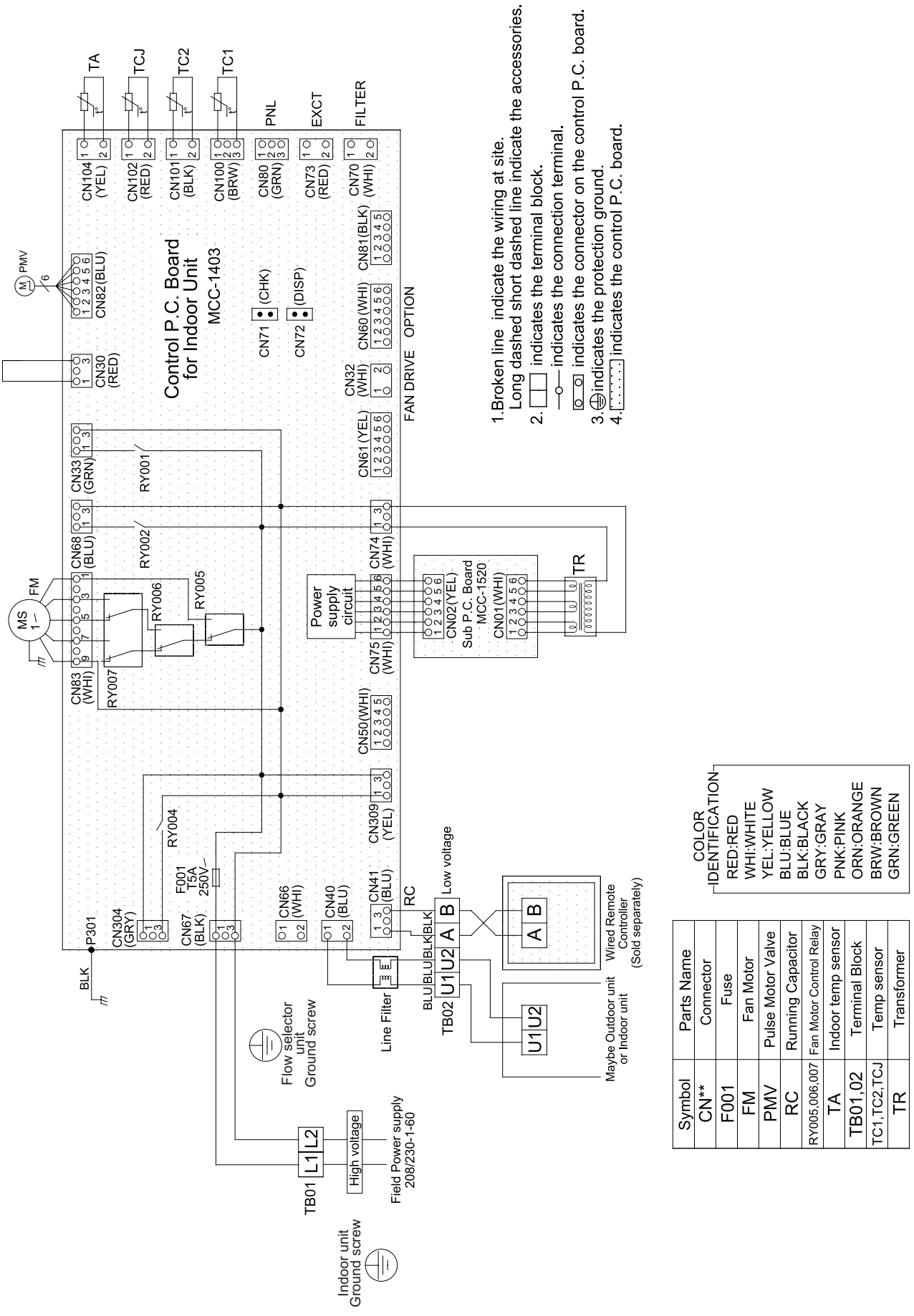


Symbol	Parts Name
CN**	Connector
F001	Fuse
FM	Fan Motor
PMV	Pulse Motor Valve
RC	Running Capacitor
RY005,006,007	Fan Motor Control Relay
TA	Indoor temp sensor
TB01,02	Terminal Block
TC1,TC2,TCJ	Temp sensor
TR	Transformer

COLOR IDENTIFICATION
RED:RED
WHI:WHITE
YEL:YELLOW
BLU:BLUE
BLK:BLACK
GRY:GRAY
PNK:PINK
ORN:ORANGE
BRW:BROWN
GRN:GREEN

3-2. Floor Console Recessed Type

MML-AP0074BH2UL, AP0094BH2UL, AP0124BH2UL, AP0154BH2UL, AP0184BH2UL, AP0244BH2UL



Symbol	Parts Name
CN**	Connector
F001	Fuse
FM	Fan Motor
PMV	Pulse Motor Valve
RC	Running Capacitor
RY005,006,007	Fan Motor Control Relay
TA	Indoor temp sensor
TB01,02	Terminal Block
TC1,TC2,TCJ	Temp sensor
TR	Transformer

COLOR IDENTIFICATION

RED	RED
WHI	WHITE
YEL	YELLOW
BLU	BLUE
BLK	BLACK
GRY	GRAY
PNK	PINK
ORN	ORANGE
BRW	BROWN
GRN	GREEN

4. PARTS RATING

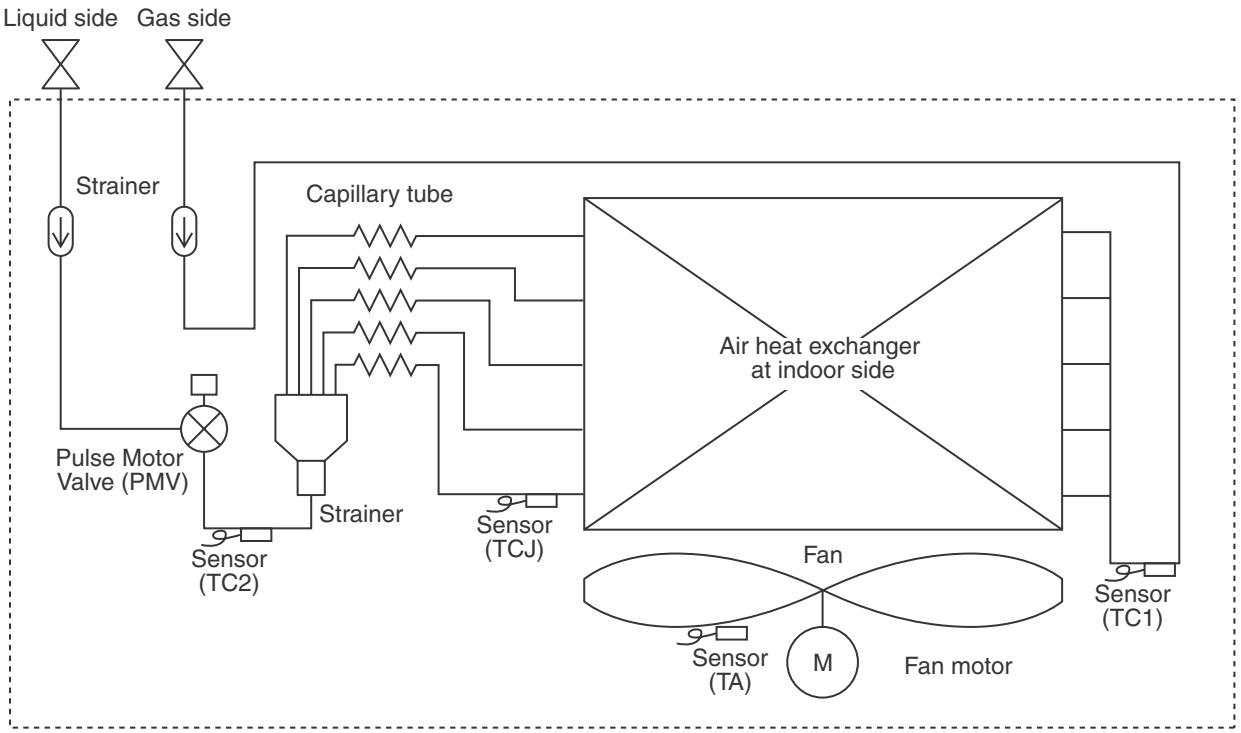
Floor Console Exposed Type

Model MML-AP	0074H	0094H	0124H	0154H	0184H	0244H
Fan motor	SWA-200U19A4A		AF-200-45-4FU		AF-200-70-4KU	
Running condenser for fan motor	AC450 V, 1.5 µF		AC450 V, 2 µF		AC400 V, 2.5 µF	
Transformer	TT12					
Pulse motor	EDM-MD12TF-3					
Pulse motor valve	EDM-B25YGTF		EFM-40YGTF			
TA sensor	Lead wire length: 32" (818 mm) Vinyl tube					
TC1 sensor	0.16" (Ø4) size lead wire length: 47" (1200 mm) Vinyl tube (Blue)					
TC2 sensor	0.24" (Ø6) size lead wire length: 47" (1200 mm) Vinyl tube (Black)					
TCJ sensor	0.24" (Ø6) size lead wire length: 47" (1200 mm) Vinyl tube (Red)					

Floor Console Recessed Type

Model MML-AP	0074BH	0094BH	0124BH	0154BH	0184BH	0244BH
Fan motor	SWA-200U19A4B			AF-200-70-4KU		
Running condenser for fan motor	AC450 V, 1.5 µF			AC450 V, 1 µF		AC400 V, 2.5 µF
Transformer	TT-12					
Pulse motor	EDM-MD12TF-3					
Pulse motor valve	EDM-B25YGTF			EFM-40YGTF		
TA sensor	Lead wire length: 32" (818 mm) Vinyl tube					
TC1 sensor	0.16" (Ø4) size lead wire length: 79" (2000 mm) Vinyl tube (Blue)					
TC2 sensor	0.24" (Ø6) size lead wire length: 79" (2000 mm) Vinyl tube (Black)					
TCJ sensor	0.24" (Ø6) size lead wire length: 79" (2000 mm) Vinyl tube (Red)					

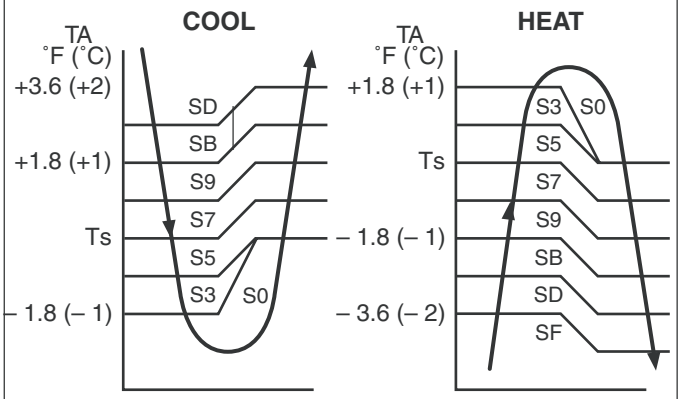
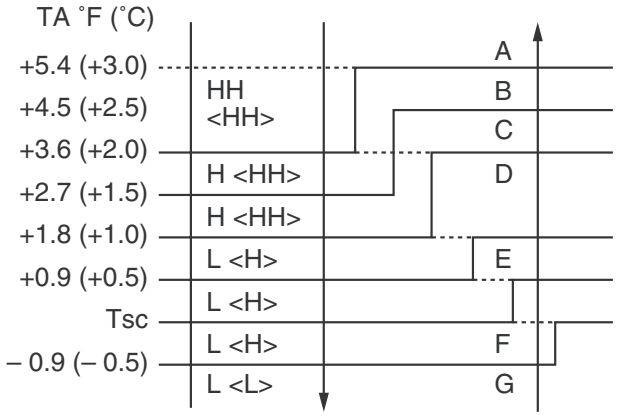
5. REFRIGERATING CYCLE DIAGRAM

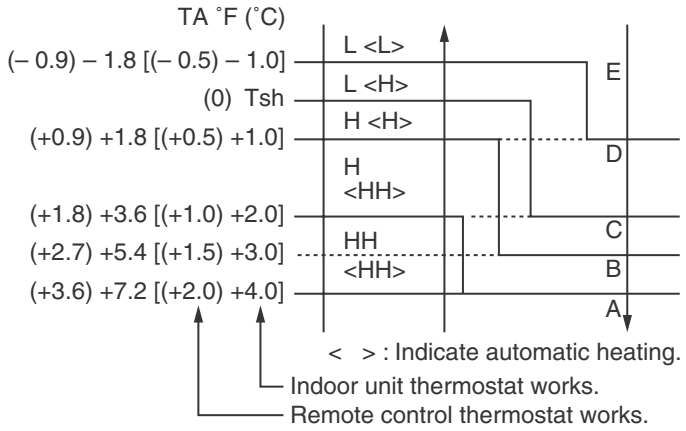
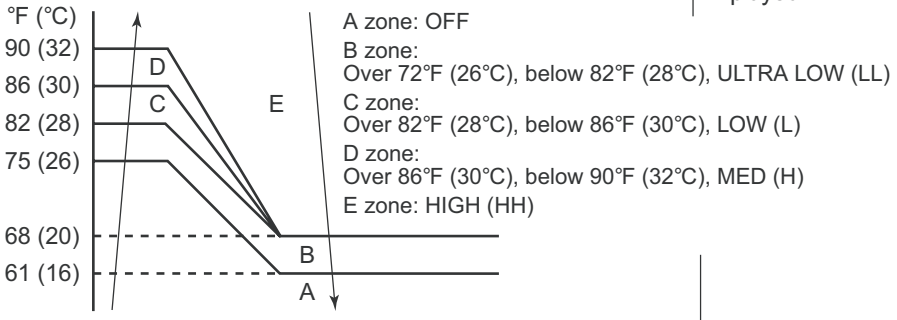


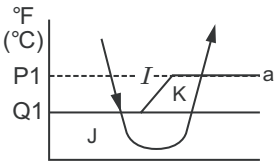
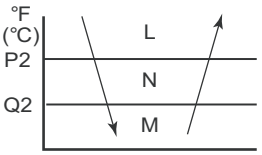
Functional part name		Functional outline
Pulse Motor Valve	PMV	(Connector CN082 (6P): Blue) 1) Controls super heat in cooling operation 2) Controls subcool in heating operation 3) Recovers refrigerant oil in cooling operation 4) Recovers refrigerant oil in heating operation
Temp. sensor	1. TA	(Connector CN104 (2P): White) 1) Detects indoor suction temperature
	2. TC1	(Connector CN100 (3P): Brown) 1) Controls PMV super heat in cooling operation
	3. TC2	(Connector CN101 (2P): Blue) 1) Controls PMV subcool in heating operation
	4. TCJ	(Connector CN102 (2P): Yellow) 1) Controls PMV super heat in cooling operation

6. CONTROL OUTLINE

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>1</td><td>When power supply is reset</td><td>1) Distinction of outdoor unit
When the power supply is reset, the outdoors are distinguished and the control is selected according to the distinguished result.
2) If resetting the power during a problem, the check code is cleared. After ON/OFF button on the remote control is pushed to resume operation and the problem persists, the check code is again displayed on the remote control.</td><td></td></tr>
<tr><td>2</td><td>Operation mode selection</td><td>1) The operation mode is selected based on the operation mode command on the remote control.
<table>
<tr><th>Remote control command</th><th>Control outline</th></tr>
<tr><td>STOP</td><td>Air conditioner stops.</td></tr>
<tr><td>FAN</td><td>Fan operation</td></tr>
<tr><td>COOL</td><td>Cooling operation</td></tr>
<tr><td>HEAT</td><td>Heating operation</td></tr>
</table></td><td></td></tr>
<tr><td>3</td><td>Room temp. control</td><td>1) Adjustment range: Remote control setup temperature (°F [°C])
<table>
<tr><th></th><th>COOL/DRY</th><th>HEAT</th></tr>
<tr><td>Wired type</td><td>64°F [18°C] to 84°F [29°C]</td><td>64°F [18°C] to 84°F [29°C]</td></tr>
<tr><td>Wireless type</td><td>63°F [17°C] to 86°F [30°C]</td><td>63°F [17°C] to 86°F [30°C]</td></tr>
</table>
2) Using the Item code 06, the setup temperature in heating operation can be corrected.
<table>
<tr><th>Setup data</th><th>0</th><th>2</th><th>4</th><th>6</th></tr>
<tr><td>Setup temp. Correction</td><td>+0°F [+0°C]</td><td>+3.6°F [+2°C]</td><td>+7.2°F [+4°C]</td><td>+10.8°F [+6°C]</td></tr>
</table>
Default setting
<table>
<tr><th>Setup data</th><td>0</td></tr>
</table></td><td>Unless the sensor of the remote control is controlled, there is a shift in the suction temperature during heating operation. (Code No. [32], “0001”)</td></tr>
</table>

No.	Item	Outline of specifications	Remarks
4	Automatic capacity control	1) Based on the difference between TA and TS, the operation capacity is determined by the outdoor unit. 	TS: Setup temp. TA: Room temp.
5	Fan speed selection	1) Operation with (HH), (H), (L) or [AUTO] mode is carried out by the command from the remote control. 2) When the fan speed mode [AUTO] is selected, the fan speed varies by the difference between TA and TS. **<COOL>**  < > : Indicate automatic cooling. • Thermostat-off control by a wired remote control sensor is the same as thermostat-off control by an indoor unit sensor. • If the fan speed has been changed once, it is not changed for 3 minutes. However when the air volume changes the fan speed changes. • When cooling operation has started, select a downward slope for the fan speed, that is, the high position. • If the temperature is just on the difference boundary, the fan speed does not change.	HH > H > L > UL Code No. 32 0000: TA sensor of Indoor unit 0001: TA sensor of wired remote control

No.	Item	Outline of specifications	Remarks
5	Fan speed selection (Continued)	**<HEAT>**  Value in the parentheses indicates one when thermostat of the remote control works. Value without parentheses indicates one when thermostat of the Indoor unit works. • If the fan speed has been changed once, it is not changed for 1 minute. However when the air volume changes, the fan speed changes. • When heating operation has started, select an upward slope for the fan speed, that is, the high position. • If the temperature is just on the margin the fan speed does not change. • In TC2 ≥ 140°F[60°C], the fan speed increases by clarify 1 step.	TC2: Indoor heat exchanger sensor temperature
6	Prevention of cold air discharge	1. In heating operation, the higher temperature of TC2 sensor and TCJ sensor is compared with temperature of TC1 sensor and then the lower temperature is used to set the upper limit of the fan tap. • When B zone has continued for 6 minutes, the operation shifts to C zone. • In defrost time, the control point is set to +10.8°F[6°C].  	TCJ: Temperature of indoor heat exchanger sensor TC1: Temperature of indoor heat exchanger sensor • In D and E zones, priority is given to remote control air speed setup. • In A zone " ⚙ " is displayed.

No.	Item	Outline of specifications	Remarks
7	Freeze prevention control (Low temp. release)	1. In all cooling operation, the air conditioner operates as described below based upon temp.detected by TC1, TC2 and TCJ sensors. • When “J” zone is detected for 5 minutes, the thermostat is forced to turn off. • In “K” zone, the timer count is interrupted, and held. • When “*I*” zone is detected, the timer is cleared and the operation returns to the normal operation. • If “J” zone continues, operation of the indoor fan in LOW mode will continue until it reaches the “*I*” zone. It is reset when the following conditions are satisfied. **Reset conditions** 1) TC1 > 54°F [12°C] and TC2 > 54°F [12°C] and TCJ > 54°F [12°C]. 2) 20 minutes passed after stop.  | | TC1 | TC2, TCJ | |---|---|---| | P1 | 50°F [10°C] (41°F [5°C]) | 14°F [–10°C] | | Q1 | 32°F [0°C] | 7°F [–14°C] | 2. In all cooling operation, the air conditioner operates as described below based upon temp. detected by TC2 and TCJ sensors. • When “M” zone is detected for 30 minutes, the thermostat is forced to turn off. • In “N” zone, the timer count is interrupted and held. • When shifting to “M” zone again, the timer count restarts and continues. • If “L” zone is detected, the timer is cleared and the operation returns to normal operation. **Reset conditions** 1) TC1 > 54°F [12°C] and TC2 > 54°F [12°C] and TCJ > 54°F [12°C]. 2) 20 minutes passed after stop.  | | TC2, TCJ | |---|---| | P2 | 41°F [5°C] | | Q2 | 28°F [–2.0°C] |	**( ) value:** When the power supply is turned on, the thermostat is forced to turn off if the temperature is less than this indicated temperature. * In a Model without TC2, TC2 is not considered.
8	Recovery control for cooling oil (Refrigerant)	The indoor unit which is in STOP/Thermostat-OFF status or which operates in [FAN] mode performs the following controls when it receives the cooling oil (Refrigerant) recovery signal from the outdoor unit. 1) Opens PMV of the indoor unit with a constant opening degree. 2) Operates the drain pump for approx. 1 minute during recovery control and after finish of control.	• Recovery operation is usually performed every 2 to 5 minutes.

No.	Item	Outline of specifications	Remarks
9	Recovery control for heating refrigerant (Oil)	The indoor unit which is in STOP/Thermostat-OFF status or which operates in [FAN] mode performs the following controls when it receives the heating refrigerant (Oil) recovery signal from the outdoor unit. 1) Opens PMV of the indoor unit with a constant opening degree. 2) Detects temperature of TC2 and then closes PMV.	• The indoor unit which is under thermostat-OFF (COOL) status or which operates in [FAN] mode stops the indoor fan and displays [READY ⊛]. • Recovery operation is usually performed every 1 hour. (When there is even 1 indoor unit which the thermostat is off)
10	Compensation control for short intermittent operation	1) For 3 minutes after start of operation, the operation is continued even if the unit enters in thermostat-OFF condition. 2) The thermostat is turned OFF in the following cases; • Case when selecting COOL or HEAT by using the remote control. • Case under READY status for operation • Case when protective control worked	
11	Display of filter sign [▦] * Separately set type TCB-AX21UL is prepared.	1) The filter sign is displayed with LC by sending the filter-reset signal to the remote control when the specified time (150H) elapsed as a result of integration of the operation time of the indoor fan. 2) The integrated timer is cleared when the filter-reset signal is received from the remote control. In this time, if the specified time elapsed, the counted time is reset and the LC display is deleted. **Filter time** 150H	[▦ FILTER] goes on.

<table>
<tr><th>No.</th><th>Item</th><th>Outline of specifications</th><th>Remarks</th></tr>
<tr><td>12</td><td>Display of [READY] [HEAT READY]</td><td>< READY> Displayed on the remote control
1) When the following check codes are indicated
• Open phase of power supply wiring [P05] was detected.
• There is an indoor unit that detected the indoor overflow [P10].
• There is an indoor unit that detected the interlock alarm [L30].
2) During Force Thermostat-OFF
• [COOL/DRY] operation is unavailable because the other indoor unit operates with [HEAT] mode.
• [HEAT] operation is unavailable because COOL priority (SW11-bit1 of the Outdoor I/F P. C. board is ON) is set and the other indoor unit operates with [COOL/DRY] mode.
3) The above indoor units that cannot operate stay in Thermostat-OFF status.
4) The indoor fan stops because the system performs [Recovery operation for heating refrigerant (Oil)].

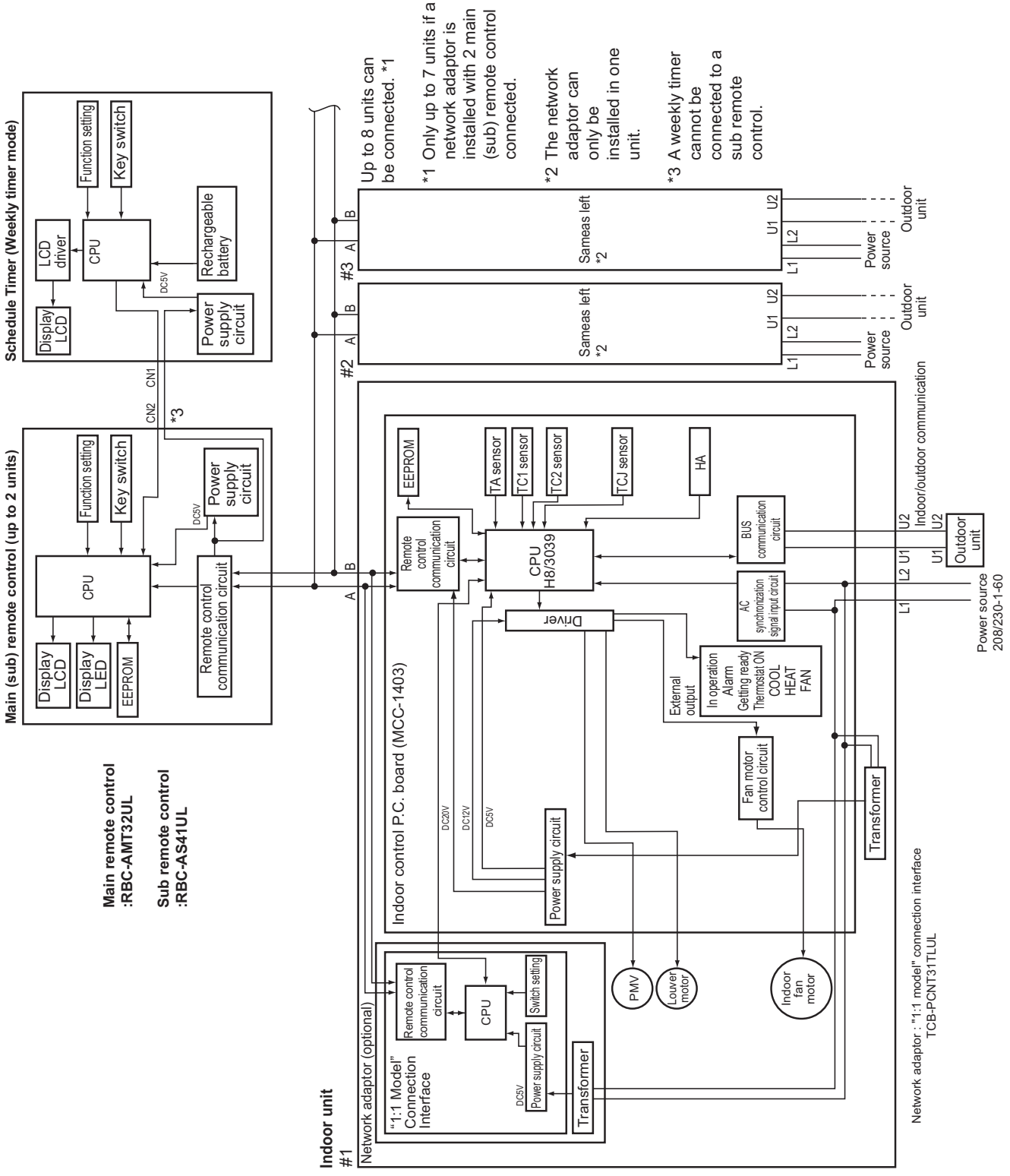
<HEAT READY> Displayed on the remote control
1. Normal thermostat. OFF
• During heating, the indoor unit goes thermostat OFF as the heating temperature setting is reached.
2. During heating, the fan rotates at a breeze speed (UL or lower) or remains stationary to prevent cold air from being discharged (including defrosting operation).
3. Forced thermostat OFF
• “HEAT” operation is unavailable because at least one indoor unit is operating in “COOL/DRY” mode under priority cooling setting (bit 1 of SW11 on outdoor I/FP.C. board ON).</td><td>• <READY ⏻ > display
No display for wireless type remote control

• <HEAT READY ☼ > display</td></tr>
<tr><td>13</td><td>Selection of central control mode</td><td>1) Selection of the contents that can be operated by the remote control at the indoor unit side is possible according to setting at the central control side.
2) Setting contents
• In case of TCC-LINK central control
<table>
<tr><th rowspan="2">Operation from TCC-LINK central control</th><th colspan="5">Operation on RBC-AMT32UL</th><th rowspan="2">On RBC-AMT32UL</th></tr>
<tr><th>ON/OFF setting</th><th>Operation selection</th><th>Timer setting</th><th>Temp. setting</th><th>Air speed setting</th></tr>
<tr><td>Individual</td><td>O</td><td>O</td><td>O</td><td>O</td><td>O</td><td rowspan="5">[Central control] display</td></tr>
<tr><td>[Central 1]</td><td>×</td><td>O</td><td>×</td><td>O</td><td>O</td></tr>
<tr><td>[Central 2]</td><td>×</td><td>×</td><td>×</td><td>×</td><td>O</td></tr>
<tr><td>[Central 3]</td><td>O</td><td>×</td><td>O</td><td>×</td><td>O</td></tr>
<tr><td>[Central 4]</td><td>O</td><td>×</td><td>O</td><td>O</td><td>O</td></tr>
</table>
(O: Operation possible ×: Operation impossible)</td><td></td></tr>
<tr><td>14</td><td>Save operation</td><td>1) The save operation starts when SAVE button on the remote control is turned on.
2) While the save operation is performed, segment goes on the screen of the wired remote control.
3) The request capacity ratio is restricted to approx. 75% during save operation.
4) If the save operation was validated, the contents are held during the operation stop, the operation mode change and the resetting of power supply. Therefore the operation at the next time also will be activated with “Save operation is valid”.</td><td></td></tr>
</table>

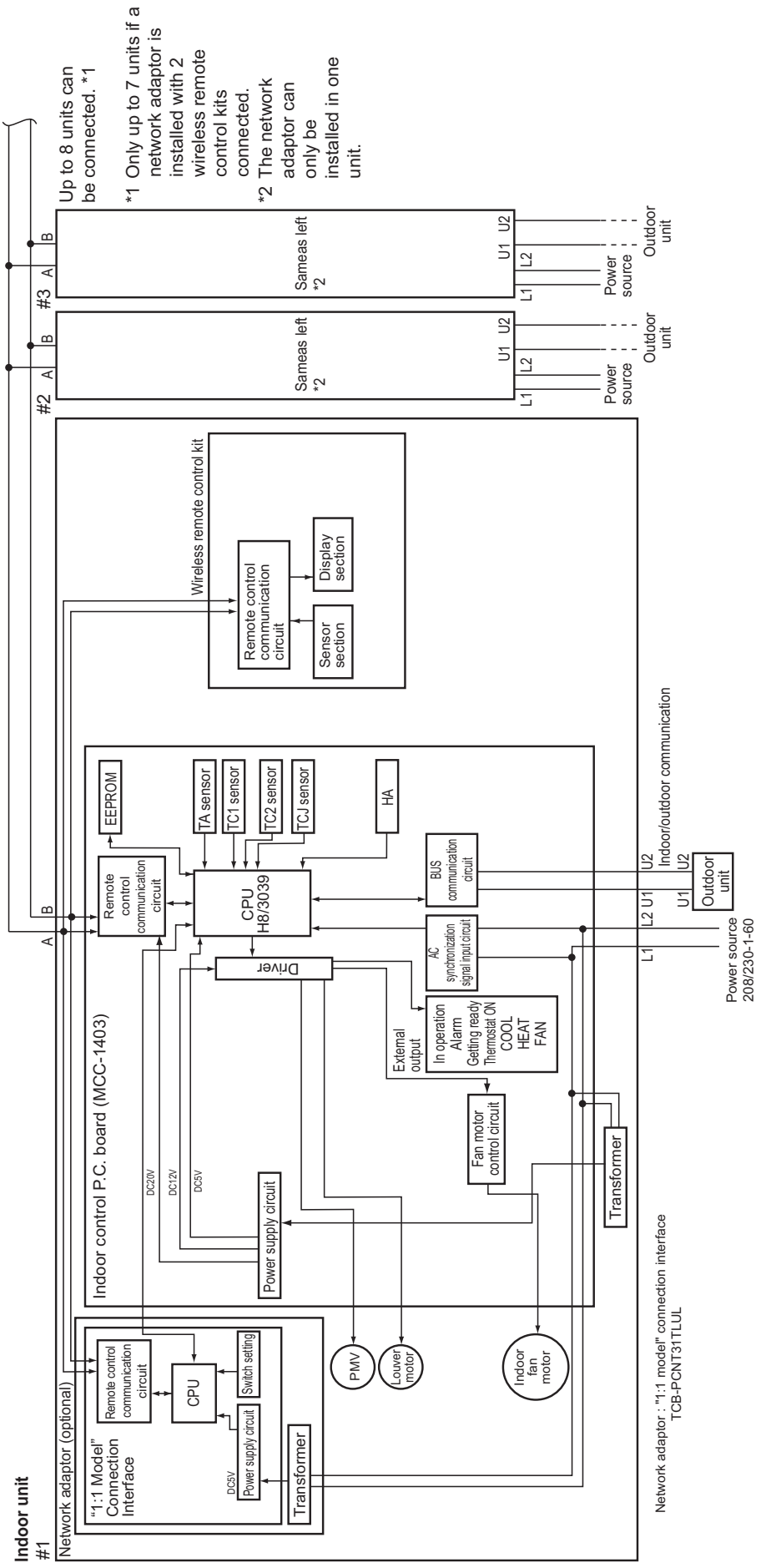
7. APPLIED CONTROL AND FUNCTION

7-1. Indoor Control Block Diagram

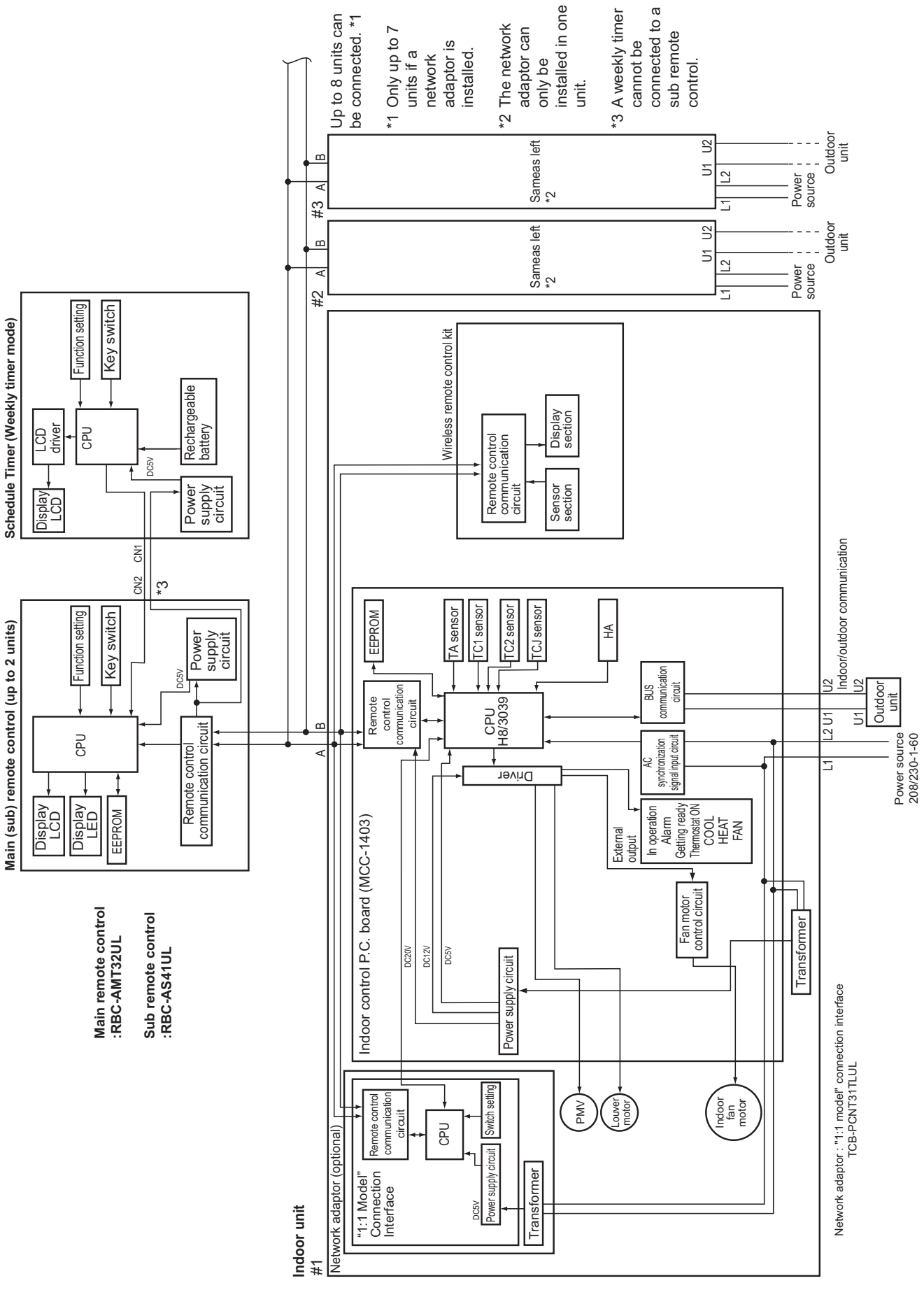
7-1-1. When Main (Simple) Wired Remote Control Connected



7-1-2. When Wireless Remote Controlr Kit Connected

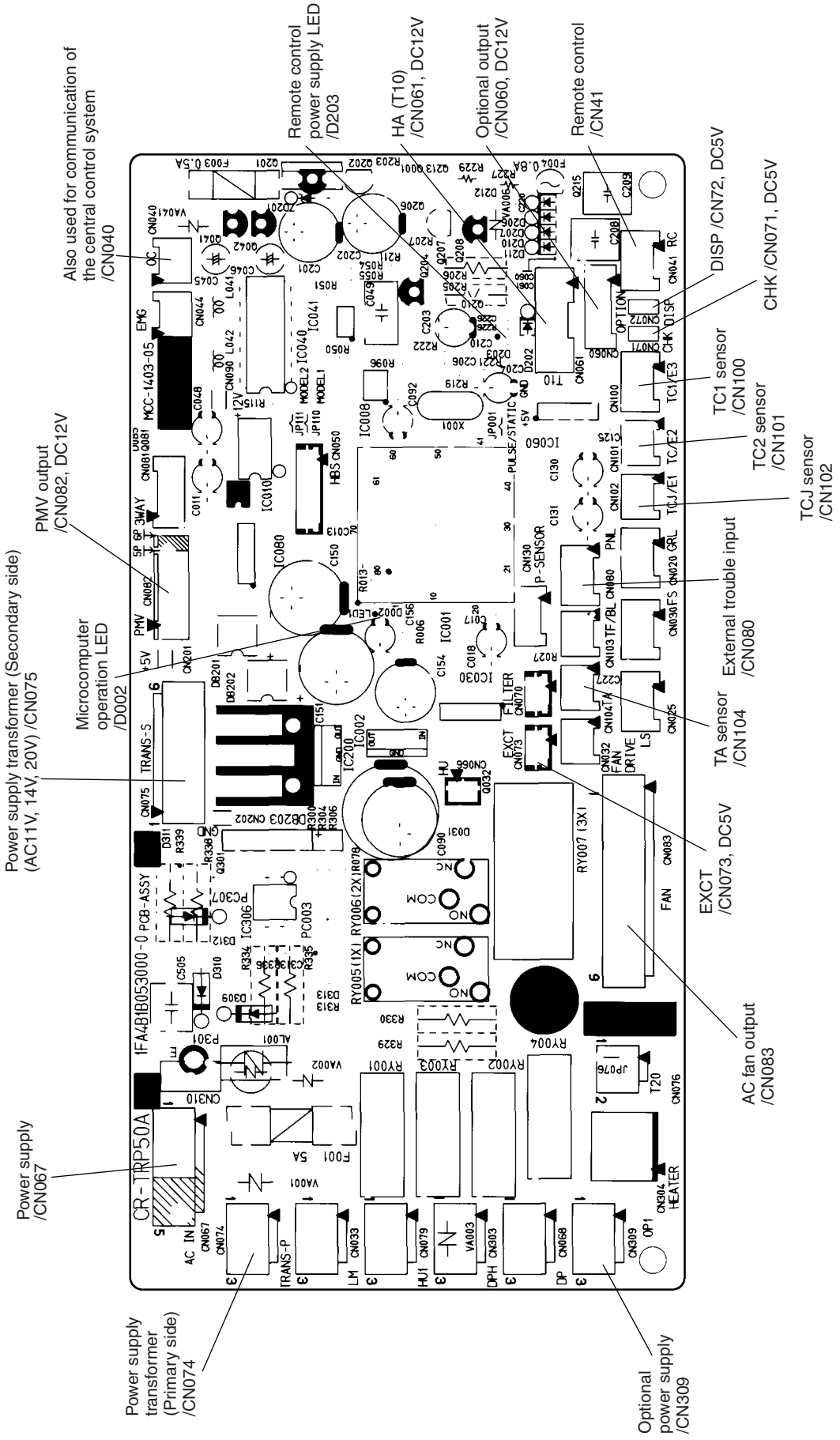


7-1-3. When Both Wired (Simple) Remote Control and Wireless Remote Control Kit Connected



7-1-4. Indoor Printed Circuit Board

MCC-1403



P.C. Board Optional Switch/Connector Specifications

Function	Connector No.	Pin No.	Specifications	Remarks
HA	CN061	1	Start / stop input	Start / stop input for HA (J01: In place / Removed = Pulse input (factory default) / Step input)
		2	0 V (COM)	
		3	Remote control disabling input	Enables / disables start / stop control via remote control
		4	In-operation output	ON during operation (HA answerback signal)
		5	DC 12 V (COM)	
		6	Alarm output	ON while alarm ON
Optional output	CN060	1	DC12 V (COM)	
		2	Defrost output	ON during defrosting of outdoor unit
		3	Thermostat-ON output	ON when Real thermostat. ON (Comp. ON)
		4	Cooling output	ON when operation mode is cooling line (Cool, Dry, Cooing/Heating AUTO cooling)
		5	Heating output	ON when operation mode is heating line (Heat, Cooling/Heating AUTO heating)
		6	Fan output	ON when indoor fan is ON
External trouble input	CN080	1	DC5 V (COM)	Generates test code “L30” and automatically shuts down air conditioner (only if condition presists for 1 minute) (DN:2A = 2, at shipment from factory)
		2	External trouble input	
CHK Operation check	CN071	1	Check mode input	This check is used for operation check of indoor unit. (The specified operation such as indoor fan “H”, drain pump ON, etc. is executed without communication with outdoor unit or remote control.)
		2	0 V	
DISP Display mode	CN072	1	Display mode input	Display mode, communication is enabled by indoor unit and remote control only. (When power supply is turned on.) Timer short (Usual)
		2	0 V	
EXCT Demand	CN073	1	Demand input	Indoor unit forced thermostat-OFF operation
		2	0 V	

7-2. Functions at test run

■ Cooling/Heating test run check

The test run for cooling/heating can be performed from either indoor remote control or outdoor interface P.C. board.

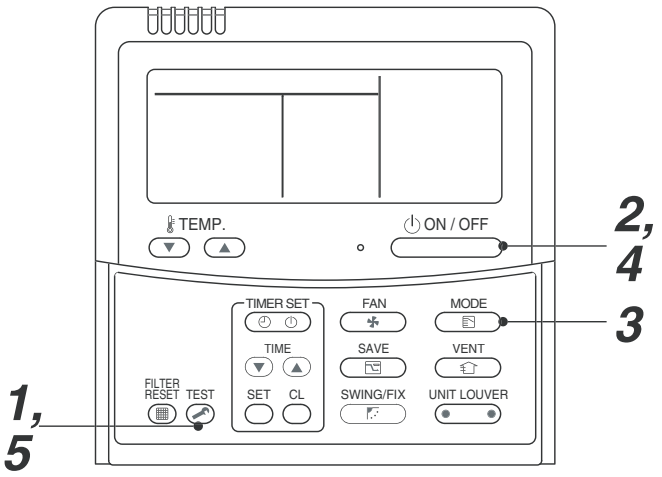
1. Start/Finish operation of test run

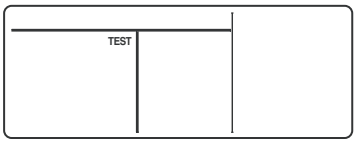
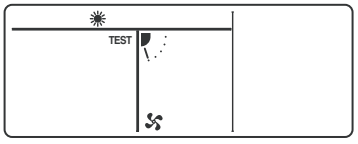
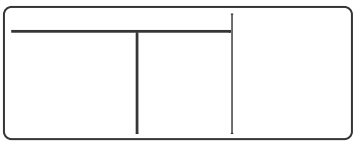
⊙ Test run from indoor remote control

- Wired remote control: Refer to the below item of “Test run” of the wired remote control.
- Wireless remote control: Refer to the next page item of “Test run” of the wireless remote control.

◆ In case of wired remote control

<RBC-AMT32UL>

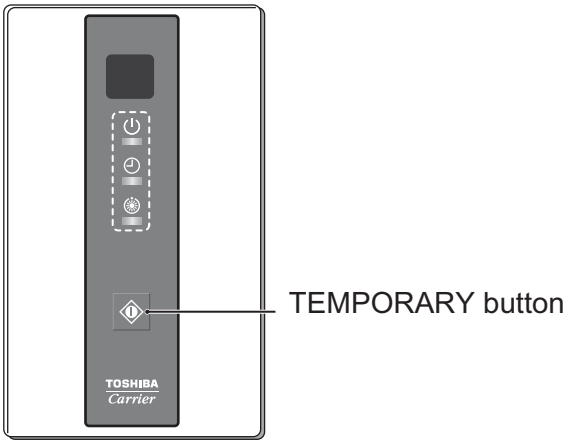


Procedure	Operation contents
1	Push [TEST] button for 4 seconds or more. [TEST] is displayed at the display part and the mode enters in TEST mode. 
2	Push [ON/OFF] button.
3	Change the mode from [COOL] to [HEAT] using [MODE] button. • Do not use [MODE] button for other mode except [COOL]/[HEAT] modes. • The temperature cannot be adjusted during test run. • The trouble detection is performed as usual. 
4	After test run, push [ON/OFF] button to stop the operation. (Display on the display part is same to that in Procedure ***1*** .)
5	Push [TEST] button to clear the TEST mode. ([TEST] display in the display part disappears and status becomes the normal stop status.) 

Note) The test run returns to the normal operation after 60 minutes.

<In case of wireless remote control (TCB-AX32-UL)>

1. When TEMPORARY button is pushed for 10 seconds or more, Pi!" sound is heard and the operation changes to a forced cooling operation. After approx. 3 minutes, a cooling operation is forced to start. Check if cool air starts blowing. If the operation does not start, check wiring again.
2. To stop a test operation, push TEMPORARY button once again (Approx. 1 second).
   • Check wiring / piping of the indoor and outdoor units in forced cooling operation.



■ Check function for operation of indoor unit (Functions at indoor unit side)

This function is provided to check the operation of the indoor unit without communication with the remote control or the outdoor unit. This function can be used regardless of operation or stop of the system. However, if using this function for a long time, a malfunction of the equipment may be caused. Limit using this function to few minutes only several minutes.

[How to operate]

1) Short-circuit CHK pin (CN071 on the indoor P.C. board).
   The operation mode differs according to the indoor unit status in that time.
   Normal time: Both float SW and fan motor are normal.
   Abnormal time: Either one of float SW or fan motor is abnormal.
2) Restricted to the normal time, if short-circuiting DISP pin (CN072 on the indoor P.C. board) in addition to short-circuit of CHK pin (CN071 on the indoor P.C. board), the minimum opening degree (30pls) can be set to the indoor PMV only.
   When opening DISP pin, the maximum opening degree (1500pls) can be obtained again.

[How to clear]

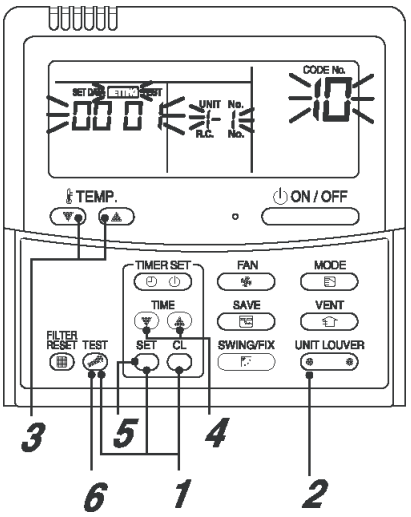
Open CHK pin. While the system is operating, it stops once but automatically returns to operation after several minutes.

	Short-circuit of CHK pin(CN071)		
	Normal time		Abnormal time
	DISP pin open(CN071)	DISP pin short circuit(CN071)	
Fan motor	(H)	(H)	Stop
Indoor PMV (*)	Max. opening degree (1500pls)	Min. opening degree (30pls)	Min. opening degree (30pls)
Communication	All ignored	All ignored	All ignored
P.C. board LED	Lights	Lights	Flashes

7-3. Method to Set Indoor Unit Function DN Code

(When performing this task, be sure to use a wired remote control)

<Procedure> To be performed only when system at rest



1 **Push the TEST + SET + CL buttons simultaneously and hold for at least 4 seconds.**

The unit No. displayed first is the address of the header indoor unit in group control.

Then the fan of the selected indoor unit move.

2 **Each time the "Select unit" side of the UNIT LOUVER button (button of left side) is pushed, one of the indoor unit Nos. under group control is displayed in turn. Then the fan of the selected indoor unit move.**

3 **Use the TEMP. button to select the CODE No. (DN code) of the desired function.**

4 **Use the TIME button to select the desired SET DATA associated with the selected function.**

5 **Push the SET button. (The display changes from flashing to steady.)**

- To change the selected indoor unit, go back to step ***2***.
- To change the selected function, go back to step ***3***.

6 **When the SET button is pushed, the system returns to normal off state.**

Function CODE No. (DN Code) Table (Includes All Functions Needed to Perform Applied Control on Site)

DN	Item	Description	At shipment
01	Filter display delay timer	0000: None 0001: 150H 0002: 2500H 0003: 5000H 0004: 10000H	According to type
02	Dirty state of filter	0000: Standard 0001: High degree of dirt (Half of standard time)	0000: Standard
03	Central control address	0001: No.1 unit to 0064: No.64 unit 0099: Unfixed	0099: Unfixed
04	Specific indoor unit priority	0000: No priority 0001: Priority	0000: No priority
06	Heating temp shift	0000: No shift to 0001: +1°C (+1.8°F) 0002: +2°C (+3.6°F) 0010: +10°C (+18°F) (Up to +6 recommended)	0002: +2°C (+3.6°F) (Floor type 0000)
0d	Existence of [AUTO] mode	0000: Provided 0001: Not provided (Automatic selection from connected outdoor unit)	0001: Not provided
0F	Cooling only	0000: Heat pump 0001: Cooling only (No display of [AUTO] [HEAT])	0000: Heat pump
10	Type	0010 : Floor Console Exposed 0011 : Floor Console Recessed	
11	Indoor unit capacity	0000: Unfixed 0001 to 0034	According to capacity type
12	Line address	0001: No.1 unit to 0030: No.30 unit	0099: Unfixed
13	Indoor unit address	0001: No.1 unit to 0064: No.64 unit	0099: Unfixed
14	Group address	0000: Individual 0001: Header unit of group 0002: Follower unit of group	0099: Unfixed
28	Automatic restart of power failure	0000: None 0001: Restart	0001: Restart
2A	Selection of option/ trouble input (CN070)	0000: Filter input 0001: Alarm input (Option parts) 0002: External interlock	0002: External interlock
2E	HA terminal (CN061) select	0000: Usual 0001: Leaving-ON prevention control 0002: Fire alarm input	0000: Usual (HA terminal)
31	Ventilating fan control	0000: Unavailable 0001: Available	0000: Unavailable
32	TA sensor selection	0000: Body TA sensor 0001: Remote control sensor	0000: Body TA sensor
33	Temperature unit select	0000: °C 0001: °F : (at factory shipment)	0001: °F
60	Timer setting (wired remote control)	0000: Available (can be performed) 0001: Unavailable (cannot be performed)	0000: Available
77	Dual set point	0000 : Unavailable 0002 : Available	0000 : Unavailable
92	Outside interlock release condition	0000: Operation stop 0001: Release com munica tion signal receive	0000: Operation stop
B3	Soft cooling	0000 : Unavailable 0001 : Available	0001 : Available
C6	Secondary Heating off outside temperature	-0015 : -15°C (5°F) to 0015 : 15°C (59°F)	0000 : 0°C (+32°F)
C7	Secondary Heating off outside temperature differential	0000 : Unavailable 0001 : -1°C (-1.8°F) to 0010 : -10°C (-18°F)	0000 : Unavailable
dB	Secondary Heating ON/OFF differential temperature	0001 : +0.5°C (+0.9°F) to 0010 : +5°C (+9°F)	0006 : +3°C (+5.4°F)
dC	Secondary Heating operate start differential temperature	0000 : Unavailable 0001 : +0.5°C (+0.9°F) to 0010 : +5°C (+9°F)	0000 : Unavailable
Fd	Priority operation mode (FS unit)	0000 : Heating 0001 : Cooling	0000 : Heating
FE	FS unit address	0001 : No.1 unit 0064 : No.64 unit 0099 : Unfixed	0099 : Unfixed

Type
DN code “10”

Value	Type	Model
0010	Floor Console Exposed	MML-AP∗∗∗H2UL
0011	Floor Console Recessed	MML-AP∗∗∗BH2UL

*1 Default value stored in EEPROM mounted on service P.C. board

Indoor Unit Capacity
DN code “11”

Value	Capacity	Value	Capacity
0000*	Invalid	0007	015 type
0001	007 type	0009	018 type
0003	009 type	0010	021 type
0005	012 type	0011	024 type

*1 Default value stored in EEPROM mounted on service P.C. board

7-4. Applied Control in Indoor Unit

■ Remote location ON/OFF control box (TCB-IFCB-4UL)

[Wiring and setup]

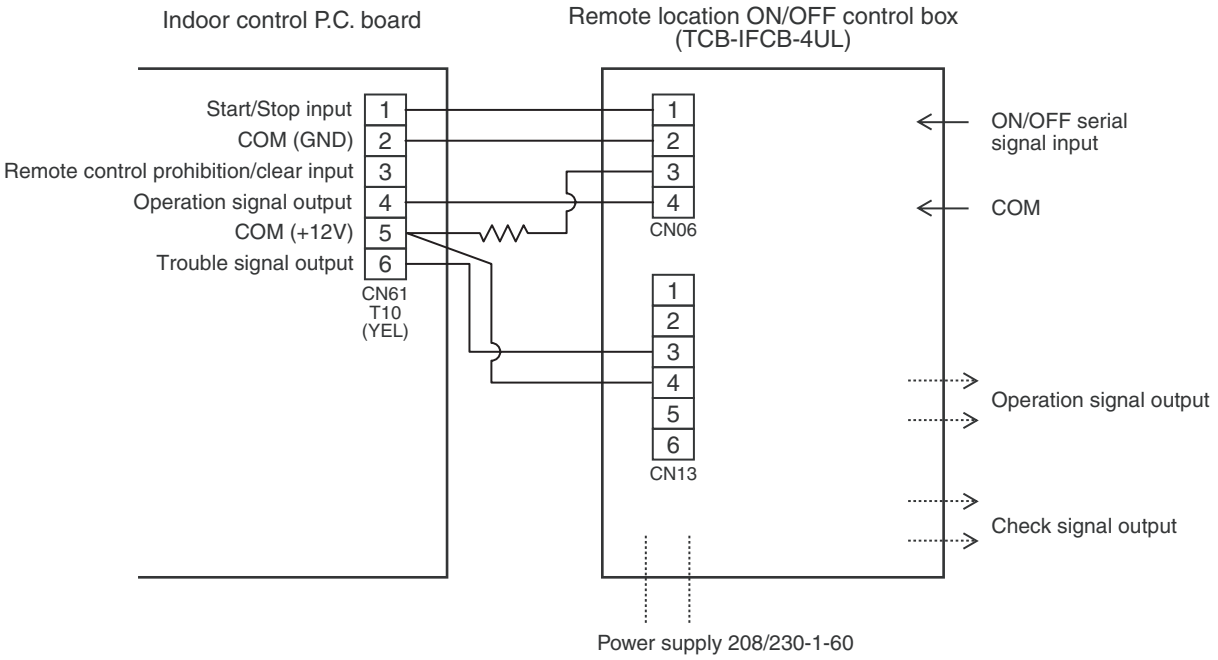
- Use the exclusive connector for connection with the indoor control P.C. board.
- In a group control, the system can operate when connecting with any indoor unit (Control P.C. board) in the group. However when taking out the operation/trouble signal from the other unit, it is necessary to take out from each unit individually.

1. Control items

1) Start/Stop input signal : Operation start/stop in unit
2) Operation signal : Output during normal operation
3) Trouble signal : Output during alarm
(Serial communication trouble or indoor/outdoor protective device) operation

2. Wiring diagram using remote control interface (TCB-IFCB-4UL)

Input IFCB-4UL : No voltage ON/OFF serial signal
Output No voltage contact for operation, check display
Contact capacity: Below Max. AC240V 0.5A



■ Ventilating fan control from remote control

[Function]

- The start/stop operation can be operated from the wired remote control when air to air heat exchanger or ventilating fan is installed in the system.
- The fan can be operated even if the indoor unit is not operating.
- Use a fan which can receive the no-voltage A contact as an outside input signal.
- In a group control, the units are collectively operated and they can not be individually operated.

1. Operation

Handle a wired remote control in the following procedure.

∗ Use the wired remote control when turning off the system.

∗ Be sure to set up the wired remote control to the header unit. (Same in group control)

∗ In a group control, if the wired remote control is set up to the header unit, both header and follower units are simultaneously operable.

1 **Push concurrently SET + CL + TEST buttons for 4 seconds or more.**

The unit No. displayed firstly indicates the header indoor unit address in the group control.
In this time, the fan of the selected indoor unit turns on.

2 **Every pushing UNIT LOUVER button (button of left side), the indoor unit numbers in group control are displayed successively.**

In this time, the fan of the selected indoor unit only turns on.

3 **Using the temperature setup ▼ / ▲ button, specify the CODE No. 31.**

4 **Using the timer time ▼ / ▲ button, select the SET DATA. (At shipment: 0000)**

The setup data are as follows:

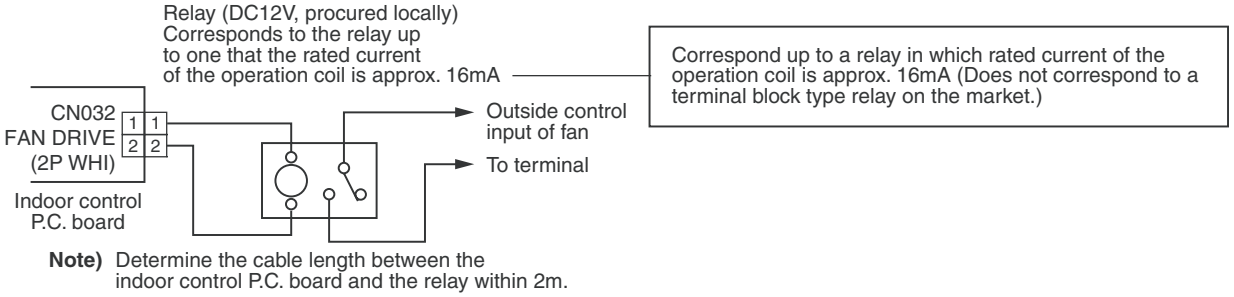
SET DATA	Handling of operation of air to air heat exchanger or ventilating fan
0000	Unavailable (At shipment)
0001	Available

5 **Push SET button. (OK if display goes on.)**

- To change the selected indoor unit, go to the procedure **2**).
- To change the item to be set up, go to the procedure **3**).

6 **Pushing TEST returns the status to the usual stop status.**

2. Wiring



Note) Determine the cable length between the indoor control P.C. board and the relay within 2m.

■ Leaving-ON prevention control

[Function]

- This function controls the indoor units individually. It is connected with cable to the control P.C. board of the indoor unit.
- In a group control, it is connected with cable to the indoor unit (Control P.C. board), and the CODE No. 2E is set to the connected indoor unit.
- It is used when the start operation from outside if unnecessary but the stop operation is necessary.
- Using a card switch box, card lock, etc, the indoor unit can be protected if it is forgotten to be turned off.
- When inserting a card, start/stop operation from the remote control is allowed.
- When taking out a card, the system stops if the indoor unit is operating and start/stop operation from the remote control is forbidden.

1. Control items

1) Outside contact ON : The start/stop operation from the remote control is allowed.
(Status that card is inserted in the card switch box)

2) Outside contact OFF : If the indoor unit is operating, it is forced to stop.
(Start/Stop prohibited to remote control)
(Status that card is taken out from the card switch box)

* When the card switch box does not perform the above contact operation, convert it using a relay with b contact.

2. Operation

Handle the wired remote control switch in the following procedure.

* Use the wired remote control switch when the system is being turned off.

1 **Push concurrently SET + CL + TEST buttons for 4 seconds or more.**

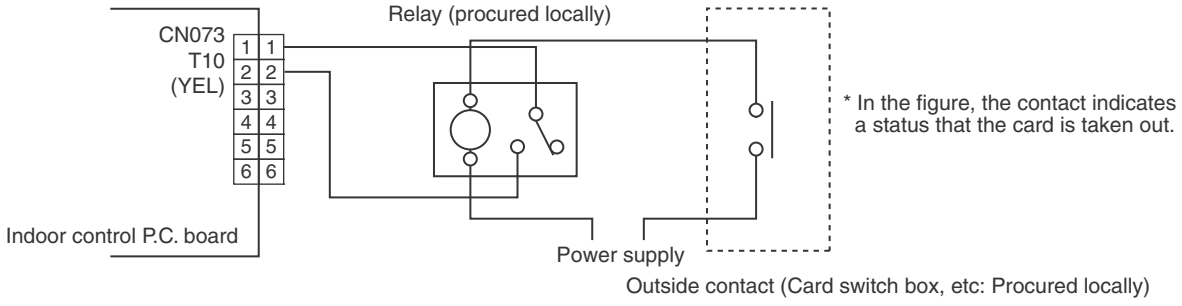
2 **Using the temperature setup ▼ / ▲ button, specify the CODE No. 2E .**

3 **Using the timer time ▼ / ▲ button, set 0001 to the setup data.**

4 **Push SET button.**

5 **Push TEST button. (The status returns to the usual stop status.)**

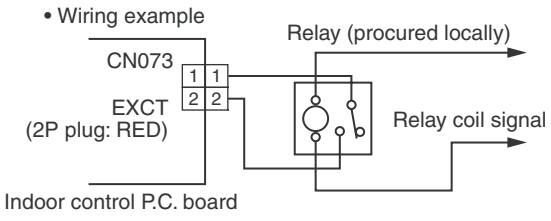
3. Wiring



Note) Determine the cable length between the indoor control P.C. board and the relay within 2m.

■ Power peak-cut from indoor unit

When the relay is turned on, a forced thermostat-OFF operation starts.



Note) Determine the cable length between the indoor or outdoor control P.C. board and the relay within 2m.

■ Address setup (Manual setting from Wired remote control)

In case that addresses of the indoor units will be determined prior to piping work after wiring work

- Set an indoor unit per a remote control.
- Turn on power supply.

1 **Push SET + CL + TEST buttons simultaneously for 4 seconds or more.**

2 **(Line address)**
Using the temperature setup ▼ / ▲ buttons, set 12 to the CODE No.

3 **Using timer time ▼ / ▲ buttons, set the line address.**

4 **Push SET button. (OK when display goes on.)**

5 **(Indoor unit address)**
Using the temperature setup ▼ / ▲ buttons, set 13 to the CODE No.

6 **Using timer time ▼ / ▲ buttons, set 1 to the line address.**

7 **Push SET button. (OK when display goes on.)**

8 **(Group address)**
Using the temperature setup ▼ / ▲ buttons, set 14 to the CODE No.

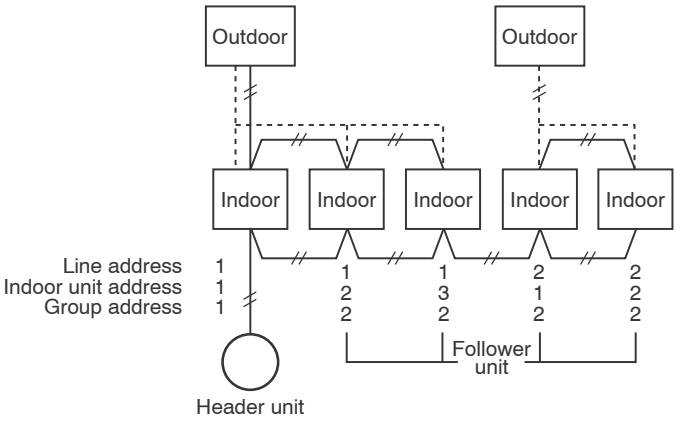
9 **Using timer time ▼ / ▲ buttons, set 0000 to Individual, 0001 to Header unit and 0002 to follower unit.**

10 **Push SET button. (OK when display goes on.)**

11 **Push TEST button.**

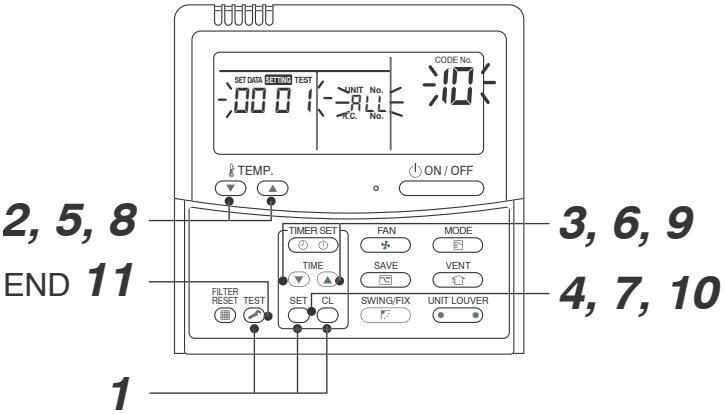
Setup completes.
(The status returns to the usual stop status.)

(Example of 2-lines cabling)
(Real line: Wiring, Broken line: Refrigerant pipe)



For the above example, perform setting by connecting singly the wired remote control without remote control inter-unit cable.

Group address
Individual : 0000
Header unit : 0001
Follower unit : 0002
} In case of group control



<Operation procedure>

1 → 2 → 3 → 4 → 5 → 6 →
7 → 8 → 9 → 10 → 11 END

Note 1)

When setting the line address from the remote control, do not use Address 29 and 30.
As they are addresses which cannot be set to the outdoor unit, if they are set, the check code [E04] (Indoor/Outdoor communication circuit trouble) is issued.

Note 2)

When an address was manually set from the remote control and the central control over the refrigerant lines is carried out, perform the following setting for the Header unit of each line.

- Set the line address for every line using SW13 and 14 on the interface P.C. board of the Header unit in each line.
- Except the least line address No., turn off SW30-2 on the interface P.C. board of the Header units in the lines connected to the identical central control.
  (Draw the terminal resistances of indoor/outdoor and central control line wirings together.)
- For each refrigerant line, connect the relay connector between Header unit [U1U2] and [U3U4] terminals.
- After this, set the central control address.
  (For setting of the central control address, refer to the Installation manual for the central control equipment.)

■ Confirmation of indoor unit No. position

1. To know the indoor unit addresses though position of the indoor unit is recognized

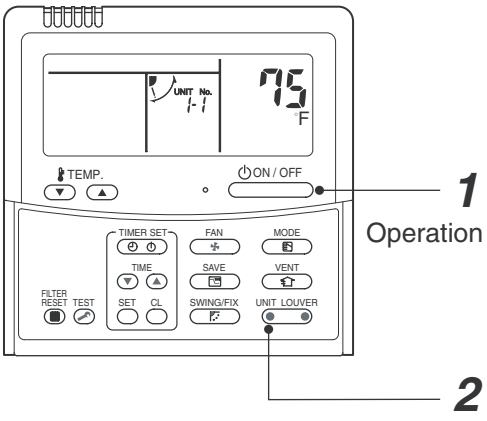
- In case of individual operation (Wired remote control : indoor unit = 1 : 1)
  (Follow to the procedure during operation)

<Procedure>

1 **Push ON / OFF button (button at left side) if the unit stops.**

2 **Push UNIT LOUVER button (button at left side).**

Unit No. 1-1 is displayed on LCD.
(It disappears after several seconds.)
The displayed unit No. indicate line address and indoor unit address.
(When other indoor units are connected to the identical remote control (Group control unit), other unit numbers are also displayed every pushing UNIT LOUVER button(button at left side).



<Operation procedure>

1 → ***2*** END

2. To know the position of indoor unit by address

- To confirm the unit No. in the group control
  (Follow to the procedure during operation) (in this procedure, the indoor units in group control stop.)

<Procedure>

The indoor unit numbers in the group control are successively displayed, and fan, louver, and drain pump of the corresponding indoor unit are turned on.
(Follow to the procedure during operation)

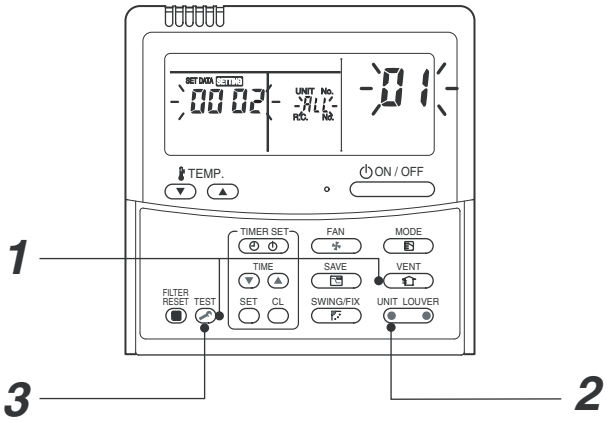
1 **Push VENT and TEST buttons simultaneously for 4 seconds or more.**

- Unit No. ALL is displayed.
- Fans of all the indoor units in the group control operate.

2 **Every pushing UNIT LOUVER button(button at left side), the unit numbers in the group control are successively displayed.**

- The unit No. displayed at the first time indicates the master unit address.
- Fan of the selected indoor unit only operate.

3 **Push TEST button to finish the procedure. All the indoor units in the group control stop.**



<Operation procedure>

1 → ***2*** → ***3*** END

■ How to check all the unit No. from an arbitrary wired remote control

<Procedure> Carry out this procedure when the system is turned off.

The indoor unit No. and the position in the identical refrigerant piping can be checked.
An outdoor unit is selected, the identical refrigerant piping and the indoor unit No. are displayed one after the other, and then its fan is on.

1 **Push the timer time button ▼ + TEST simultaneously for 4 seconds or more.**
First line 1 and CODE No. AC (Address Change) are displayed. (Select outdoor unit.)

⇩

2 **Select line address using UNIT LOUVER / SWING/FIX button.**

⇩

3 **Determine the selected line address using SET button.**

- The address of the indoor unit connected to the refrigerant piping of the selected outdoor unit is displayed and the fan is on.

⇩

4 **Every pushing UNIT LOUVER button (button at left side), the indoor unit No. in the identical piping is displayed one after the other.**

- Only fan of the selected indoor unit start operation.

⇩

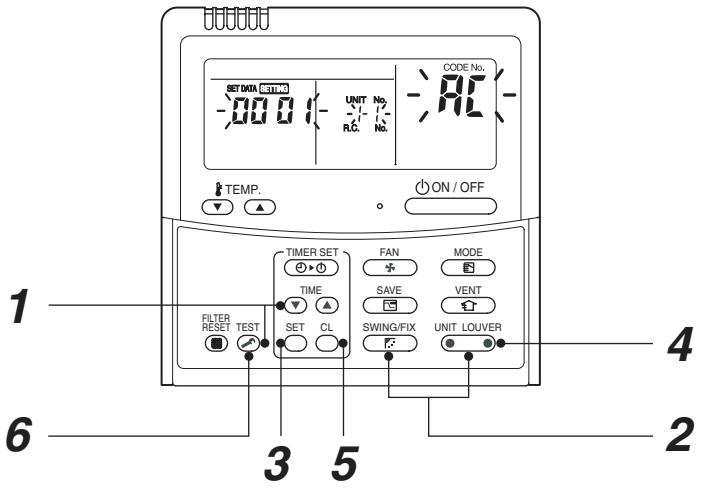
[To select the other line address]

5 **Push CL button and the operation returns to Procedure *2*.**

* The indoor address of other line can be continuously checked.

⇩

6 **Push TEST button and then the procedure finishes.**



<Operation procedure>

1 → ***2*** → ***3*** → ***4*** → ***5*** → ***6*** END

■ How to change an indoor unit address by using a wired remote control

Use this method to change the address of indoor units (one to one or group control) that have had the original address set automatically.
This procedure must be done while the units are not operating.

1 **Simultaneously push and hold the "SET (SET) ", "CL (CL) ", and "TEST (TEST) " buttons for more than 4 seconds. If there are 2 or more units in a group, the first "UNIT No." indicated is the header unit.**

⇩

2 **Push the left end of the "UNIT LOUVER (UNIT LOUVER) " button repeatedly to select an indoor unit address to change. If 2 or more units are controlled in a group the fan of the selected unit will be energized.**

⇩

3 **Push the TEMP. (▼) / (▲) buttons repeatedly to select for CODE No.**

⇩

4 **Push the TIME (▼) / (▲) buttons repeatedly to change the value indicated in the SET DATA section.**

⇩

5 **Push the "SET (SET) " button, to save address.**

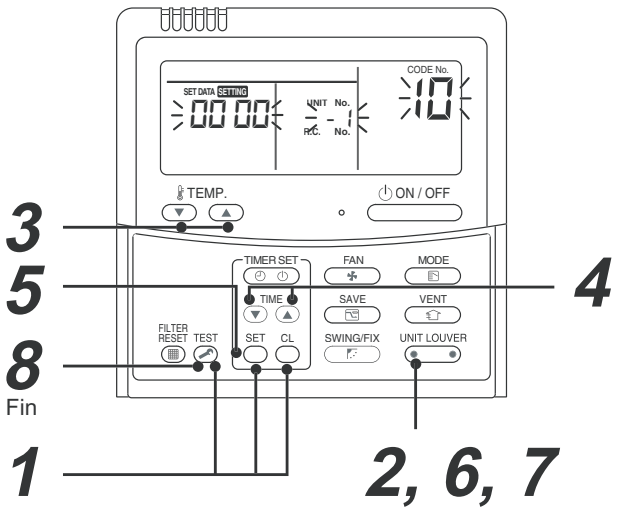
⇩

6 **Push left and of the "UNIT LOUVER (UNIT LOUVER) " button repeatedly to select another indoor unit addresses to change. Repeat steps 4 through 6 to continue changing indoor unit address and make each of them unique.**

7 **Push the left end of the "UNIT LOUVER (UNIT LOUVER) " button to review/confirm the revised addresses.**

⇩

8 **If the addresses have been changed correctly, push the "TEST (TEST) " button to finish the procedure.**



■ How to change all indoor addresses from an arbitrary wired remote control

(It is possible when setting has finished by automatic addresses.)

Contents: The indoor unit addresses in each identical refrigerant piping line can be changed from an arbitrary wired remote control.

◉ Enter in address check/change mode and then change the address.

<Procedure> Carry out this procedure during stop of system.

1 Push the timer time button (▼) + TEST simultaneously for 4 seconds or more. First line 1 and CODE No. AC (Address Change) are displayed.

⇩

2 Select line address using UNIT LOUVER / SWING/FIX button.

⇩

3 Push the SET button.

- The address of the indoor unit connected to the refrigerant piping of the selected outdoor unit is displayed and the fan is on.
  First the current indoor address is displayed.
  (Line address is not displayed.)

⇩

4 TIME (▼) (▲) button push up/down the indoor address of the SET DATA.

The set data is changed to a new address.

⇩

5 Push SET button to determine the set data.

⇩

6 Every pushing UNIT LOUVER button (button at left side), the indoor unit No. in the identical piping is displayed one after the other.

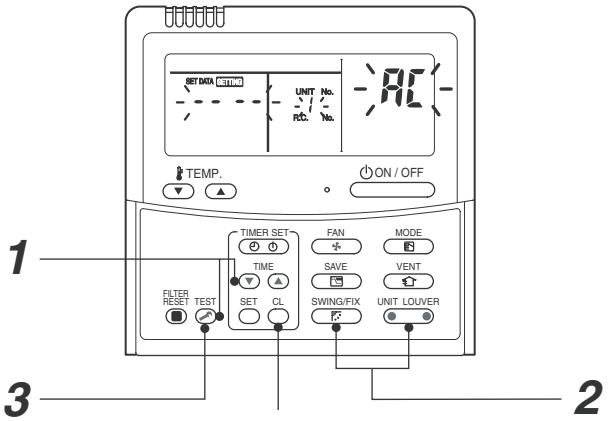
- Only fan of the selected indoor unit start operation.
  Repeat the Procedures ***4*** to ***6*** to change all the indoor addresses so that they are not duplicated.

⇩

7 Push SET button.
(All the indications of LCD go on.)

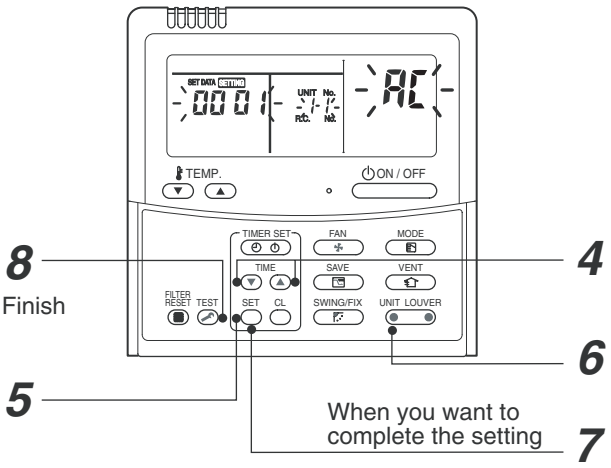
⇩

8 Push TEST button and then the procedure finishes.



If the UNIT No. is not called up here, the outdoor unit in that line does not exist.

Push CL button to select a line again in the Procedure ***2***.



<Operation procedure>

1→ 2→ 3→4→5→ 6→ 7→ 8 END

■ Function to clear the check code

1. Clearing method from remote control

⊙How to clear the check code of outdoor unit

The currently detected check code of the outdoor unit is cleared by using the service monitor function of the remote control. (Check code of the indoor unit is not cleared.)
(Only the check code of the outdoor unit in one refrigerant line system is cleared.)

<Method>

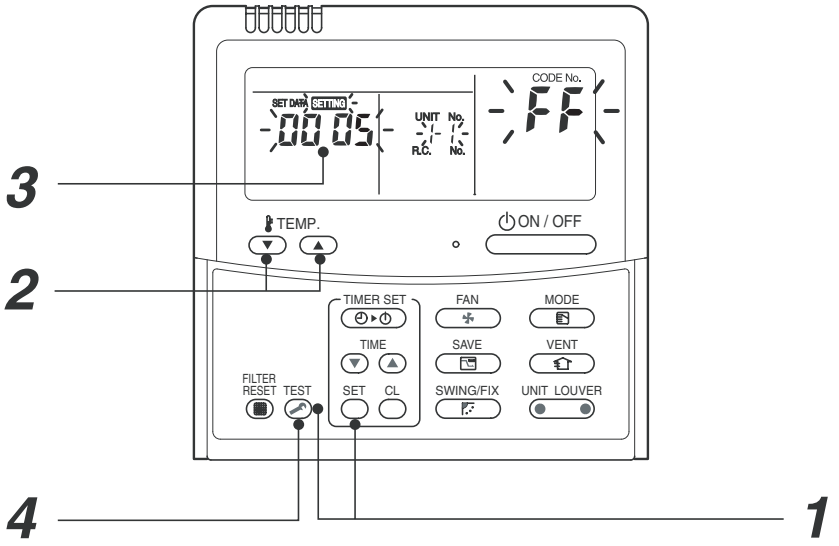
1 **Push CL + TEST buttons simultaneously for 4 seconds or more to change the mode to service monitor mode.**

2 **Push TEMP. button to set the item code to [FF].**

3 **The display of A part in the following figure is counted as "0005 " → "0004 " → "0003 " → "0002 " → "0001 " → "0000 " with 5-seconds interval.**
When "0000 " appear, the check code was cleared.

* However counting from "0005 " is repeated on the display screen.

4 **When pushing TEST button, the status becomes normal.**



<Operation procedure>

1→ 2→ 3→ 4

Returns to normal status

⊙How to clear the check code of indoor unit

The check code of indoor unit is cleared by ON / OFF button of the remote control.
(Only the check code of the indoor unit connected with remote control to be operated is cleared.)

The currently detected check code of the outdoor unit is cleared by using the service monitor function of the remote control. (Check code of the indoor unit is not cleared.)(Only the check code of the outdoor unit in one refrigerant line system is cleared.)

■ Monitoring function of remote control switch

When using the remote control (Model Name: RBC-AMT32UL), the following monitoring function can be utilized.

Calling of display

<Contents>

The temperature of each sensor of the remote control, indoor unit and outdoor unit and the operating status can be checked by calling the service monitor mode from the remote control.

<Procedure>

1 **Push TEST + CL buttons simultaneously for 4 seconds or more to call up the service monitor mode.**
The service monitor goes on and firstly the temperature of the CODE No. 00 is displayed.

⇩

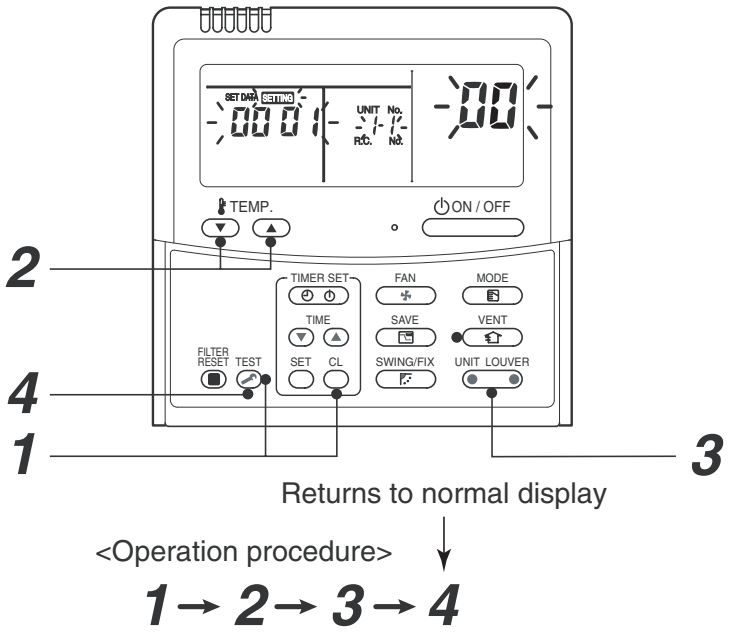
2 **Push TEMP. button to change CODE No.**
(CODE No.) to the CODE No. to be monitored.
For display code, refer to the following table.

⇩

3 **Push UNIT LOUVER button (button at left side) to change to item to be monitored.**
The sensor temperature of indoor unit or outdoor unit in its refrigerant line and the operating status are monitored.

⇩

4 **Push TEST button to return the status to the normal display.**



< Based on the SMMS-e >

	CODE No.	Data name	Display format	Unit	Remote control display example
Indoor unit data *2	00	Room temperature (Use to control)	×1	°C	[0027] = 27 °C
	01	Room temperature (Remote control)	×1	°C	
	02	Indoor suction air temperature (TA)	×1	°F	[0080] = 80 °F
	03	Indoor coil temperature (TCJ)	×1	°F	
	04	Indoor coil temperature (TC2)	×1	°F	
	05	Indoor coil temperature (TC1)	×1	°F	
	06	Indoor discharge air temperature (TF) *1	×1	°F	
	08	Indoor PMV opening	×1/10	pls	[0150]= 1500 pls
	F3	Filter sign time	×1	h	[2500] = 2500h
	F9	Suction temperature of air to air heat exchanger (TSA) *1	×1	°F	[0080]= 80 °F
	FA	Outside air temperature (TOA)*1	×1	°F	
System data	0A	No. of connected indoor units	×1	unit	[0048]= 48 units
	0B	Total horsepower of connected indoor units	×10	ton	[0215]= 21.5 ton
	0C	No. of connected outdoor units	×1	unit	[0003]= 3 units
	0D	Total horsepower of outdoor units	×10	ton	[0160]= 16 ton

	CODE No.			Data name	Display format	Unit	Remote control display example
	U1	U2	U3				
Outdoor unit individual data 1 *3	10	20	30	High-pressure sensor detention pressure (Pd)	×10	psi	[4350] = 435 psi
	11	21	31	Low-pressure sensor detention pressure (Ps)	×10	psi	
	12	22	32	Compressor 1 discharge temperature (TD1)	×1	°F	[0080]= 80 °F
	13	23	33	Compressor 2 discharge temperature (TD2)	×1	°F	
	15	25	35	Outdoor coil temperature (TE1)	×1	°F	
	16	26	36	Outdoor coil temperature (TE2)	×1	°F	
	17	27	37	Outdoor coil temperature (TG1)	×1	°F	
	18	28	38	Outdoor coil temperature (TG2)	×1	°F	
	19	29	39	Outside ambient temperature (TO)	×1	°F	
	1A	2A	3A	Suction temperature (TS1)	×1	°F	
	1C	2C	3C	Suction temperature (TS3)	×1	°F	
	1D	2D	3D	Temperature at liquid side (TL1)	×1	°F	
	1E	2E	3E	Temperature at liquid side (TL2)	×1	°F	
	1F	2F	3F	Temperature at liquid side (TL3)	×1	°F	

	CODE No.			Data name	Display format	Unit	Remote control display example
	U1	U2	U3				
Outdoor unit individual data 2 *4	50	60	70	PMV1 opening	×1	pls	[0500] = 500pls
	51	61	71	PMV3 opening	×1	pls	
	52	62	72	PMV4 opening	×1	pls	
	53	63	73	1 fan model : Compressor 1 curent (I1) 2 fan model : Compressor 1 and Outdoor fan 1 current (I1)	×10	A	[0135] = 13.5A
	54	64	74	1 fan model : Compressor 2 and Outdoor fan 1 current (I2) 2 fan model : Compressor 2 and Outdoor fan 2 current (I2)	×10	A	
	56	66	76	Compressor 1 revolutions	×10	rps	[0642] = 64.2rps
	57	67	77	Compressor 2 revolutions	×10	rps	
	59	69	79	Outdoor fan mode	×1	mode	[0058] = 58 mode
	5A	6A	7A	Compressor IPDU 1 heat sink temperature	×1	°F	[0024] = 24 °F
	5B	6B	7B	Compressor IPDU 2 heat sink temperature	×1	°F	
	5D	6D	7D	Outdoor fan IPDU 1 heat sink temperature	×1	°F	
	5E	6E	7E	Outdoor fan IPDU 2 heat sink temperature	×1	°F	
	5F	6F	7F	Outdoor unit horsepower	×10	ton	[0080] = 8 ton

	CODE No.	Data name	Display format	Unit	Remote control display example
Outdoor unit individual data 3 *5	90	Heating/cooling recovery controlled	0: Normal		[0010]=Heating recovery controlled
	91	Pressure release	0: Normal 1: Release controlled		[0010]=Pressure release controlled
	92	Discharge temperature release			[0001]=Discharge temperature release controlled
	93	Follower unit release (U2/U3 outdoor units)			[0100]=U2 outdoor unit release controlled

*1 Only a part of indoor unit types is installed with the discharge air temperature sensor. This temperature is not displayed for other types.

*2 When the units are connected to a group, data of the header indoor unit only can be displayed.

*3 The first digit of an CODE No. indicates the outdoor unit number.

*4 The upper digit of an CODE No. -4 indicates the outdoor unit number.
1∗, 5∗ ... U1 outdoor unit (Header unit)
2∗, 6∗ ... U2 outdoor unit (Follower unit 1)
3∗, 7∗ ... U3 outdoor unit (Follower unit 2)

5 Only the CODE No. 9 of U1 outdoor unit (Header unit) is displayed.

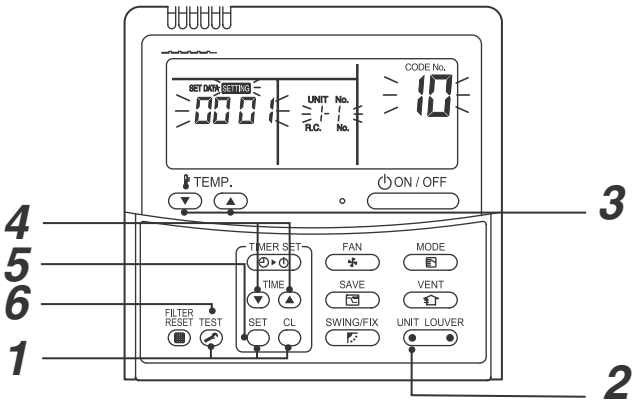
■ Changing of settings for Celsius display

• Push ON / OFF button if the unit stops.

Procedure *1*

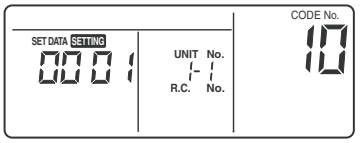
Push simultaneously TEST + SET + CL buttons for 4 seconds or more.
After a while, the display part flashes as shown right. Check the displayed CODE No. is [10].

- When the CODE No. is other than [10], push TEST button to erase the display and repeat procedure from the first step. (After pushing TEST button, operation of the remote control is not accepted for approx. 1 minute.)
  (For a group control, No. of the firstly displayed indoor unit becomes the header unit.)



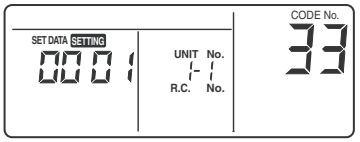
Procedure *2*

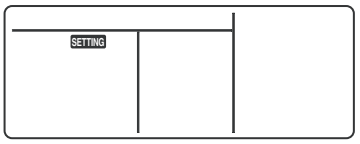
Every time the button is pushed, UNIT LOUVER (button at left side), the indoor unit No. in the group control is displayed in order. Select the indoor unit of which setup is changed.
In this time, the position of the indoor unit of which setup is changed can be confirmed because fan of the selected indoor unit will operate.



Procedure *3*

1. Using temp. setup TEMP. buttons, specify CODE No. [33].
   (CODE No. [33]: Fahrenheit display)
2. Using timer TIME buttons, change the line address from [0001] to [0000]
3. Push SET button. In this time, the setup finishes when the display changes from flashing to lighting.





Procedure *4*

After verifying the content change, push TEST button. (Setup is determined.)
When pushing TEST button, the display disappears and the status becomes the usual stop status.
(When pushing TEST button the operation from the remote control is not accepted for approx. 1 minute.)

- If the operation from the remote control is not accepted after 1 minute of pushing the TEST button, it is considered that the address setup is incorrect. In this case, the automatic address must be set up again.
  When changing the settings from Celsius to Fahrenheit follow the reverse order of the above procedure.

8. TROUBLESHOOTING

8-1. Overview

(1) Before engaging in troubleshooting

(a) Applicable models
All Super Module Multi (SMMS-i, SMMS-e) models.
(Indoor units: MM∗-AP∗∗∗, Outdoor units: MMY-MAP∗∗∗)

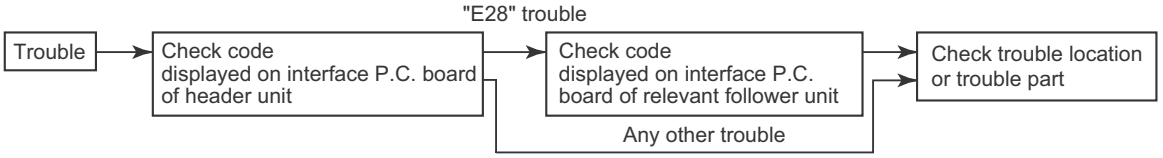
(b) Tools and measuring devices required

- Screwdrivers (Philips, flat head), spanners, long-nose pliers, nipper, pin to push reset switch, etc.
- Multimeter, thermometer, pressure gauge, etc.

(c) Things to check prior to troubleshooting (behaviors listed below are normal)

NO.	Behavior	Possible cause
1	A compressor would not start	• Could it just be the 3-minute delay period (3 minutes after compressor shutdown)? • Could it just be the air conditioner having the thermostat set to OFF? • Could it just be the air conditioner operating in fan mode or put on the timer? • Could it just be the system going through initial communication?
2	An indoor fan would not start	• Could it just be cold air discharge prevention control, which is part of heating?
3	An outdoor fan would not start or would change speed for no reason	• Could it just be cooling operation under low outside temperature conditions? • Could it just be defrosting operation?
4	An indoor fan would not stop	• Could it just be the elimination of residual heat being performed as part of the air conditioner shutdown process after heating operation?
5	The air conditioner would not respond to a start/stop command from a remote control	• Could it just be the air conditioner operation under external or remote control?

(2) Troubleshooting procedure
When a trouble occurs, proceed with troubleshooting in accordance with the procedure shown below.



NOTE

Rather than a genuine trouble (see the List of Check Codes below), the problem could have been caused by a microprocessor malfunction attributable to a poor quality of the power source or an external noise. Check for possible noise sources, and shield the remote control wiring and signal wires as necessary.

8-2. Troubleshooting Method

The remote controls (main remote control and central control remote control) and the interface P.C. board of an outdoor unit are provided with an LCD display (remote control) or a 7-segment display (outdoor interface P.C. board) to display operational status. Using this self-diagnosis feature, the problem may be identified in the event of a problem by following the method described below.

The list below summarizes check codes detected by various devices. Analyze the check code according to where it is displayed and work out the nature of the problem in consultation with the list.

- When investigating a problem on the basis of a display provided on the indoor remote control or TCC-LINK central control remote control - See the “TCC-LINK remote control or main remote control display” section of the list.
- When investigating a problem on the basis of a display provided on an outdoor unit - See the “Outdoor 7-segment display” section of the list.
- When investigating a problem on the basis of a wireless remote control-controlled indoor unit - See the “Light sensor indicator light block” section of the list.

List of Check Codes (Indoor Unit)

(Check code detected by indoor unit)

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)
○ : Lighting, ◎ : Flashing, ● : Goes off
ALT.: Flashing is alternately when there are two flashing LED
SIM: Simultaneous flashing when there are two flashing LED

Check code			Display of receiving unit				Typical problem site	Description of Check code
TCC-LINK central control or main remote control display	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation ⏻	Timer ◴	Ready ❋	Flash		
E03	–	–	◎	●	●		Indoor-remote control periodic communication trouble	Communication from remote control or network adaptor has been lost (so has central control communication).
E04	–	–	●	●	◎		Indoor-outdoor periodic communication trouble	Signals are not being received from outdoor unit.
E08	E08	Duplicated indoor address	◎	●	●		Duplicated indoor address	Indoor unit detects address identical to its own.
E10	–	–	◎	●	●		Indoor inter-MCU communication trouble	MCU communication between main control and motor microcontroller is faulty.
E18	–	–	◎	●	●		Trouble in periodic communication between indoor header and follower unit	Periodic communication between indoor header and follower units cannot be maintained.
F01	–	–	◎	◎	●	ALT	Indoor heat exchanger temperature sensor (TCJ) trouble	Heat exchanger temperature sensor (TCJ) has been open/short-circuited.
F02	–	–	◎	◎	●	ALT	Indoor heat exchanger temperature sensor (TC2) trouble	Heat exchanger temperature sensor (TC2) has been open/short-circuited.
F03	–	–	◎	◎	●	ALT	Indoor heat exchanger temperature sensor (TC1) trouble	Heat exchanger temperature sensor (TC1) has been open/short-circuited.
F10	–	–	◎	◎	●	ALT	Room air temperature sensor (TA/TSA) trouble	Room air temperature sensor (TA) has been open/short-circuited.
F11	–	–	◎	◎	●	ALT	Discharge air temperature sensor (TF/TFA) trouble	Discharge air temperature sensor (TF) has been open/short-circuited.
F17	–	–	◎	◎	○	ALT	Outside air suction temperature sensor (TOA) trouble	Open/Short of outside air suction temperature sensor (TOA) was detected.
F18	–	–	◎	◎	○	ALT	Indoor air suction temperature sen sor (TRA) trouble	Discharge air temperature sensor (TF) has been open/short-circuited.
F29	–	–	◎	◎	●	SIM	P.C. board or other indoor trouble	Open/Short of indoor air suction temperature sensor (TRA) was detected.
L03	–	–	◎	●	◎	SIM	Duplicated indoor group header unit	There is more than one header unit in group.
L07	–	–	◎	●	◎	SIM	Connection of group control cable to stand-alone indoor unit	There is at least one stand-alone indoor unit to which group control cable is connected.
L08	L08	–	◎	●	◎	SIM	Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at outdoor unit end).
L09	–	–	◎	●	◎	SIM	Indoor capacity not set	Capacity setting has not been performed for indoor unit.
L20	–	–	◎	○	◎	SIM	Duplicated central control address	There is duplication in central control address setting.
L30	L30	Detected indoor unit No.	◎	○	◎	SIM	Indoor external trouble input (interlock)	Unit shutdown has been caused by external trouble input (CN080).
P01	–	–	●	◎	◎	ALT	Indoor AC fan trouble	Indoor AC fan trouble is detected (activation of fan motor thermal relay).
P31	–	–	◎	●	◎	ALT	Other indoor unit trouble	Follower unit cannot be operated due to header unit alarm (E03/L03/L07/L08).

(Trouble detected by main remote control)

Check code			Display of receiving unit				Typical fault site	Description of trouble
Main remote control	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation	Timer	Ready	Flash		
E01	–	–	◎	●	●		No master remote control, faulty remote control communication (reception)	Signals cannot be received from indoor unit; master remote control has not been set (including two remote control).
E02	–	–	◎	●	●		Faulty remote control communication (transmission)	Signals cannot be transmitted to indoor unit.
E09	–	–	◎	●	●		Duplicated master remote control	Both remote controls have been set as master remote control in two remote control (alarm and shutdown for header unit and continued operation for follower unit)

(Trouble detected by central control device)

Check code			Display of receiving unit				Typical fault site	Description of trouble
TCC-LINK central control	Outdoor 7-segment display		Indicator light block					
		Sub-code	Operation	Timer	Ready	Flash		
C05	–	–	No indication (when main remote control also in use)				Faulty central control communication (transmission)	Central control device is unable to transmit signal due to duplication of central control device
C06	–	–					Faulty central control communication (reception)	Central control device is unable to receive signal.
–	–	–					Multiple network adapters	Multiple network adapters are connected to remote control communication line.
C12	–	–	–				Blanket alarm for general-purpose device control interface	Device connected to general-purpose device control interface for TCC-LINK is faulty.
P30	–	–	As per alarm unit (see above)				Group control follower unit trouble	Group follower unit is faulty (unit No. and above detail [ ] displayed on main remote control)

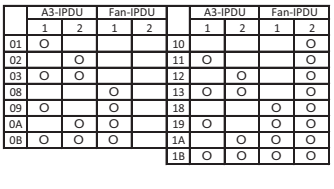
Note: The same trouble, e.g. a communication trouble, may result in the display of different check codes depending on the device that detects it.
Moreover, check codes detected by the main remote control/central control device do not necessarily have a direct impact on air conditioner operation.

List of Check Codes (Outdoor Unit)

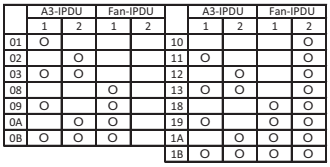
(Check code detected by SMMS-e outdoor interface - typical examples)

If “HELLO” is displayed on the oudoor 7-segment for 1 minute or more, turn off the power supply once and then turn on the power supply again after 30 seconds or more. When the same symptom appears, it is considered there is a possibility of I/F board trouble.

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)
○ : Lighting, ◎ : Flashing, ● : Goes off
ALT.: Flashing is alternately when there are two flashing LED
SIM: Simultaneous flashing when there are two flashing LED

Check code			Display of receiving unit				Typical problem site	Description of problem
Outdoor 7-segment display		TCC-LINK central control or main remote control display	Indicator light block					
	Sub-code		Operation	Timer	Ready	Flash		
E06	Number of indoor units from which signal is received normally	E06	●	●	◎		Signal lack of indoor unit	Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).
E07	–	(E04)	●	●	◎		Indoor-outdoor communication circuit trouble	Signal cannot be transmitted to indoor units (→ indoor units left without communication from outdoor unit).
E08	Duplicated indoor address	(E08)	◎	●	●		Duplicated indoor address	More than one indoor unit are assigned same address (also detected at indoor unit end).
E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	E12	◎	●	●		Automatic address starting trouble	Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.
E15	–	E15	●	●	◎		Indoor unit not found during automatic address setting	Indoor unit fails to communicate while automatic address setting for indoor units is in progress.
E16	00: Overloading 01: Number of units connected	E16	●	●	◎		Too many indoor units connected/overloading	Combined capacity of indoor units is too large (more than 135% of combined capacity of outdoor units).
E19	00: No header unit 02: Two or more header units	E19	●	●	◎		Trouble in number of outdoor header units	There is no or more than one outdoor header unit in one refrigerant line.
E20	01: Connection of outdoor unit from other refrigerant line 02: Connection of indoor unit from other refrigerant line	E20	●	●	◎		Connection to other refrigerant line found during automatic address setting	Indoor unit from other refrigerant line is detected while indoor automatic address setting is in progress.
E23	–	E23	●	●	◎		Outdoor-outdoor communication transmission trouble	Signal cannot be transmitted to other outdoor units.
E25	–	E25	●	●	◎		Duplicated follower outdoor address	There is duplication in outdoor addresses set manually.
E26	Address of outdoor unit from which signal is not received normally	E26	●	●	◎		Signal lack of outdoor unit	Follower outdoor unit initially communicating normally fails to do so (reduction in number of follower outdoor units connected).
E28	Detected outdoor unit No.	E28	●	●	◎		Outdoor follower unit trouble	Outdoor header unit detects fault relating to follower outdoor unit (detail displayed on follower outdoor unit).
E31		E31	●	●	◎		IPDU communication trouble Sub MCU communication trouble	There is no communication between IPDUs (P.C. boards) in inverter box.
F04	–	F04	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD1) trouble	Outdoor discharge temperature sensor (TD1) has been open/short-circuited.
F05	–	F05	◎	◎	○	ALT	Outdoor discharge temperature sensor (TD2) trouble	Outdoor discharge temperature sensor (TD2) has been open/short-circuited.
F06	01: TE1 02: TE2	F06	◎	◎	○	ALT	Outdoor heat exchanger liquid side temperature sensor (TE1, TE2) trouble	Outdoor heat exchanger liquid side temperature sensors (TE1, TE2) have been open/short-circuited.
F07	01: TL1 02: TL2 03: TL3	F07	◎	◎	○	ALT	Outdoor liquid temperature sensor (TL1, TL2, TL3) trouble	Outdoor liquid temperature sensor (TL1, TL2, TL3) has been open/short-circuited.
F08	–	F08	◎	◎	○	ALT	Outdoor outside air temperature sensor (TO) trouble	Outdoor outside air temperature sensor (TO) has been open/short-circuited.

Check code			Display of receiving unit				Typical problem site	Description of problem
Outdoor 7-segment display		TCC-LINK central control or main remote control display	Indicator light block					
	Sub-code		Operation	Timer	Ready	Flash		
F09	01: TG1 02: TG2						Outdoor heat exchanger gas side temperature sensor (TG1, TG2) trouble	Outdoor heat exchanger gas side temperature sensors (TG1, TG2) have been open/-short circuited.
F12	01: TS1 03: TS3	F12	◎	◎	○	ALT	Outdoor suction temperature sensor (TS1,TS3) trouble	Outdoor suction temperature sensor (TS1,TS3) has been open/short-circuited.
F15	–	F15	◎	◎	○	ALT	Outdoor temperature sensor (TE1,TL1) wiring trouble	Wiring trouble in outdoor temperature sensors (TE1,TL1) has been detected.
F16	–	F16	◎	◎	○	ALT	Outdoor pressure sensor (Pd, Ps) wiring trouble	Wiring trouble in outdoor pressure sensors (Pd, Ps) has been detected.
F23	–	F23	◎	◎	○	ALT	Low pressure sensor (Ps) trouble	Output voltage of low pressure sensor (Ps) is zero.
F24	–	F24	◎	◎	○	ALT	High pressure sensor (Pd) trouble	Output voltage of high pressure sensor (Pd) is zero or provides abnormal readings when compressors have been turned off.
F31	–	F31	◎	◎	○	SIM	Outdooe EEPROM trouble	Outdoor EEPROM is faulty (alarm and shutdown for header unit and continued operation for follower unit)
H05	–	H05	●	◎	●		Outdoor discharge temperature sensor (TD1) wiring trouble	Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD1) has been detected
H06	–	H06	●	◎	●		Activation of low-pressure protectio	Low pressure (Ps) sensor detects abnormally low operating pressure.
H07	–	H07	●	◎	●		Low oil level protection	Temperature sensor for oil level detection (TK1,TK2,TK4,TK5) detects abnormally low oil level.
H08	01: TK1 sensor trouble 02: TK2 sensor trouble 04: TK4 sensor trouble 05: TK5 sensor trouble	H08	●	◎	●		Trouble in temperature sensor for oil level detection (TK1,TK2,TK4,TK5)	Temperature sensor for oil level detection (TK1,TK2,TK4,TK5) has been open/short-circuited.
H15	–	H15	●	◎	●		Outdoor discharge temperature sensor (TD2) wiring trouble	Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD2) has been detected.
H16	01: TK1 oil circuit trouble 02: TK2 oil circuit trouble 04: TK4 oil circuit trouble 05: TK5 oil circuit trouble	H16	●	◎	●		Oil level detection circuit trouble	No temperature change is detected by temperature sensor for oil level detection (TK1,TK2,TK4,TK5) despite compressor having been started.
L04	–	L04	◎	○	◎	SIM	Duplicated outdoor refrigerant line address	Identical refrigerant line address has been assigned to outdoor units belonging to different refrigerant piping systems.
L06	Number of priority indoor units (check code L05 or L06 depending on individual unit)	L05	◎	●	◎	SIM	Duplicated priority indoor unit (as displayed on priority indoor unit)	More than one indoor unit have been set up as priority indoor unit.
		L06	◎	●	◎	SIM	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	More than one indoor unit have been set up as priority indoor unit.
L08	–	(L08)	◎	●	◎	SIM	Indoor group address not set	Address setting have not been performed for one or more indoor units (also detected at indoor end).
L10	–	L10	◎	○	◎	SIM	Outdoor capacity not set	Outdoor unit capacity has not been set (after P.C. board replacement).
L17	–	L17	◎	○	◎	SIM	Outdoor model incompatibility trouble	Old model outdoor unit (prior to 6 series) has been connected.
L23	–	L23	◎	○	◎	SIM	SW setting mistake	Bit 3 and 4 of SW17 are turning on.
L28	–	L28	◎	○	◎	SIM	Too many outdoor units connected	More than three outdoor units have been connected.

Check code			Display of receiving unit				Typical problem site	Description of problem
Outdoor 7-segment display		TCC-LINK central control or main remote control display	Indicator light block					
	Sub-code		Operation ⏻	Timer ◴	Ready ❁	Flash		
L29	 Circle (O): IPDU trouble	L29	◎	○	◎	SIM	Trouble in number IPDUs	There are insufficient number of IPDUs (P.C. boards) in inverter box.
L30	Detected indoor unit No.	(L30)	◎	○	◎	SIM	Indoor external trouble input (interlock)	Indoor unit has been shut down for external trouble input in one refrigerant line (detected by indoor unit).
P03	–	P03	◎	●	◎	ALT	Outdoor discharge (TD1) temperature trouble	Outdoor discharge temperature sensor (TD1) has detected abnormally high temperature.
P05	00: Open phase detected	P05	◎	●	◎	ALT	Open phase/power failure	Open phase is detected when power is turned on. Inverter DC voltage is too high (overvoltage) or too low (undervoltage).
	01: Compressor 1 02: Compressor 2						Inverter DC voltage (Vdc) trouble MG-CTT trouble	
P07	01: Compressor 1 02: Compressor 2	P07	◎	●	◎	ALT	Heat sink overheating trouble	Temperature sensor built into IPM (TH) detects overheating.
P10	Indoor unit No. detected	(P10)	●	◎	◎	ALT	Indoor unit overflow	Indoor unit has been shutdown in one refrigerant line due to detection of overflow (detected by indoor unit).
P13	–	P13	●	◎	◎	ALT	Outdoor liquid backflow detection trouble	State of refrigerant cycle circuit indicates liquid backflow operation.
P15	01: TS condition 02: TD condition	P15	◎	●	◎	ALT	Gas leak detection	Outdoor suction temperature sensor (TS1) detects sustained and repeated high temperatures that exceed standard value.
P17	–	P17	◎	●	◎	ALT	Outdoor discharge (TD2) temperature trouble	Outdoor discharge temperature sensor (TD2) detects abnormally high temperature.
P19	Outdoor unit No. detected	P19	◎	●	◎	ALT	4-way valve reversing trouble	Abnormality in refrigerating cycle is detected during heating operation.
P20	–	P20	◎	●	◎	ALT	Activation of high-pressure protection	High pressure (Pd) sensor detects high pressure that exceeds standard value.

MG-CTT: Magnet contactor

(Check code detected by IPDU featuring in SMMS-e standard outdoor unit - typical examples)

Check code			Display of receiving unit				Typical problem site	Description of proplem
Outdoor 7-segment display		TCC-LINK central control or main remote control display	Indicator light block					
	Sub-code		Operation ⏻	Timer ◴	Ready ❄	Flash		
F13	01: Compressor 1 02: Compressor 2	F13	◎	◎	○	ALT	Trouble in temperature sensor built into indoor IPM (TH)	Temperature sensor built into indoor IPM (TH) has been open/short-circuited.
H01	01: Compressor 1 02: Compressor 2	H01	●	◎	●		Compressor breakdown	Inverter current (Idc) detection circuit detects overcurrent.
H02	01: Compressor 1 02: Compressor 2	H02	●	◎	●		Compressor trouble (lockup)	Compressor lockup is detected
H03	01: Compressor 1 02: Compressor 2	H03	●	◎	●		Current detection circuit trouble	Abnormal current is detected while inverter compressor is turned off.
P04	01: Compressor 1 02: Compressor 2	P04	◎	●	◎	ALT	Activation of high-pressure SW	High-pressure SW is activated.
P07	01: Compressor 1 02: Compressor 2	P07	◎	●	◎	ALT	Heat sink overheating trouble	Temperature sensor built into IPM (TH) detects overheating or has been short-circuited.
P22	#0:Element short circuit #1:Position detection circuit trouble #3:Motor lock trouble #4:Motor current trouble #C:TH Sensor temperature trouble #D:TH Sensor short circuit/release trouble #E:Vdc voltage trouble ∗Put in Fan IPDU No. in [#] mark	P22	◎	●	◎	ALT	Outdoor fn IPDU trouble	Outdoor fan IPDU detects trouble.
P26	01: Compressor 1 02: Compressor 2	P26	◎	●	◎	ALT	Activation of IPM short-circuit protection	Short-circuit protection for compressor motor driver circuit components is activated (momentary overcurrent).
P29	01: Compressor 1 02: Compressor 2	P29	◎	●	◎	ALT	Compressor position detection circuit trouble	Compressor motor position detection trouble is detected.

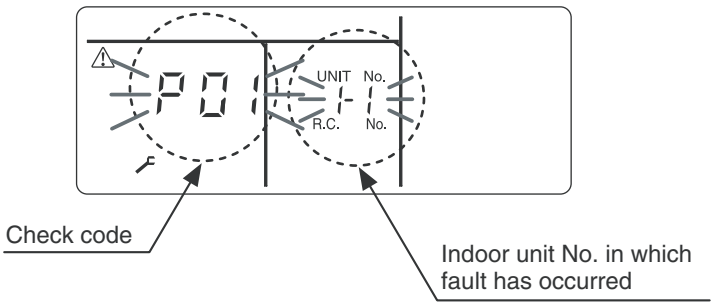
Note: The above check codes are examples only, and different check codes may be displayed depending on the outdoor unit configuration

8-3. Troubleshooting Based on Information Displayed on Remote Control

Using main remote control (RBC-AMT32UL)

(1) Checking and testing

When a fault occurs to an air conditioner, a check code and indoor unit No. are displayed on the display window of the remote control.
Check codes are only displayed while the air conditioner is in operation.
If the display has already disappeared, access trouble history by following the procedure described below.



(2) Trouble history

The trouble history access procedure is described below (up to four troubles stored in memory).
Trouble history can be accessed regardless of whether the air conditioner is in operation or shut down.

<Procedure> To be performed when system at rest

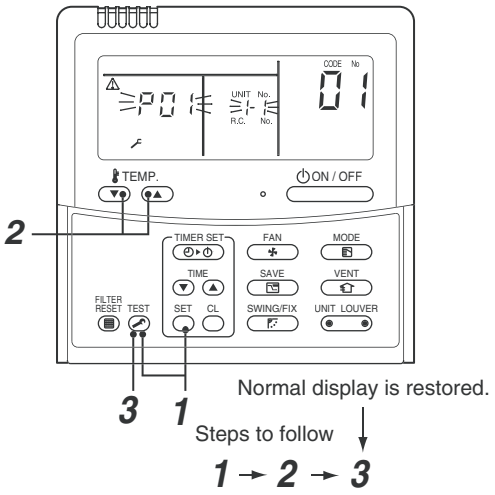
1 **Invoke the SERVICE CHECK mode by pushing the TEST + SET buttons simultaneously and holding for at least 4 seconds.**

The letters " SERVICE CHECK" light up, and the check code "01" is displayed, indicating the trouble history. This is accompanied by the indoor unit No. to which the trouble history is related and a check code.

2 **To check other trouble history items, push the TEMP. bu another check code.**

Check code "0 i" Check code "04" (oldest)
Note: Err i ntains four items.

3 **When the TEST button is pushed, normal display is restored.**



REQUIREMENT

Do not pu button as it would erase the whole trouble history of the indoor unit.

How to read displayed information

<7-segment display symbols>

0 1 2 3 4 5 6 7 8 9 A b C d E F H J L P

<Corresponding alphanumerical letters>

0 1 2 3 4 5 6 7 8 9 A b C d E F H J L P

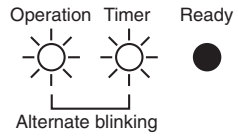
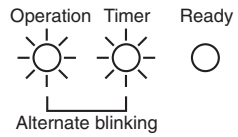
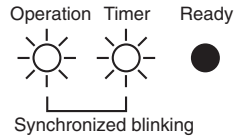
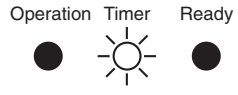
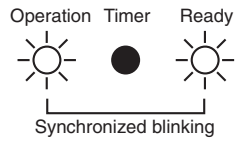
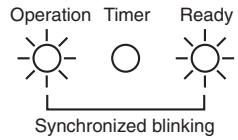
Using indoor unit indicators (receiving unit light block) (wireless type)

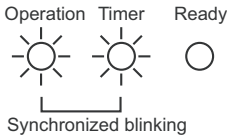
To identify the check code, check the 7-segment display on the header unit. To check for check codes not displayed on the 7-segment display, consult the “List of Check Codes (Indoor Unit)” in “8-2. Troubleshooting Method”.

●: Goes off ◯: Lighting ☼: Blinking (0.5 seconds)

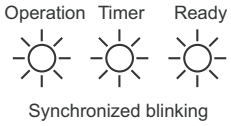
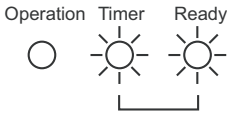
Light block	Check code	Cause of fault		
Operation ● Timer ● Ready ● All lights out	–	Power turned off or trouble in wiring between receiving and indoor units		
Operation ☼ Timer ● Ready ● Blinking	E01	Faulty reception	Receiving unit	Trouble or poor contact in wiring between receiving and indoor units
	E02	Faulty transmission		
	E03	Loss of communication		
	E08	Duplicated indoor unit No. (address)		Setting trouble
	E09	Duplicated master remote control		
	E10	Indoor unit inter-MCU communication trouble		
	E12	Automatic address starting trouble		
	E18	Trouble or poor contact in wiring between indoor units, indoor power turned off		
Operation ● Timer ● Ready ☼ Blinking	E04	Trouble or poor contact in wiring between indoor and outdoor units (loss of indoor-outdoor communication)		
	E06	Faulty reception in indoor-outdoor communication (Signal lack of indoor unit)		
	E07	Faulty transmission in indoor-outdoor communication		
	E15	Indoor unit not found during automatic address setting		
	E16	Too many indoor units connected/overloading		
	E19	Trouble in number of outdoor header units		
	E20	Detection of refrigerant piping communication trouble during automatic address setting		
	E23	Faulty transmission in outdoor-outdoor communication		
	E25	Duplicated follower outdoor address		
	E26	Faulty reception in outdoor-outdoor communication, Signal lack of outdoor unit		
	E28	Outdoor follower unit trouble		
	E31	IPDU communication trouble, sub MCU communication trouble		
Operation ● Timer ☼ Ready ☼ Alternate blinking	P01	Indoor AC fan trouble		
	P13	Outdoor liquid backflow detection trouble		
Operation ☼ Timer ● Ready ☼ Alternate blinking	P03	Outdoor discharge (TD1) temperature trouble		
	P04	Activation of outdoor high-pressure SW		
	P05	Open phase/power failure Inverter DC voltage (Vdc) trouble MG-CTT trouble		
	P07	Outdoor heat sink overheating trouble - Poor cooling of electrical component (IPM) of outdoor unit		
	P15	Gas leak detection - insufficient refrigerant charging		
	P17	Outdoor discharge (TD2) temperature trouble		
	P19	Outdoor 4-way valve reversing trouble		
	P20	Activation of high-pressure protection		
	P22	Outdoor fan IPDU trouble		
	P26	Outdoor IPM short-circuit trouble		
	P29	Compressor position detection circuit trouble		
	P31	Shutdown of other indoor unit in group due to fault (group follower unit trouble)		

MG-CTT: Magnet contactor

Light block	Check code	Cause of fault	
	F01	Heat exchanger temperature sensor (TCJ) trouble	Indoor unit temperature sensor troubles
	F02	Heat exchanger temperature sensor (TC2) trouble	
	F03	Heat exchanger temperature sensor (TC1) trouble	
	F10	Ambient temperature sensor (TA/TSA) trouble	
	F11	Discharge temperature sensor (TF) trouble	
	F04	Discharge temperature sensor (TD1) trouble	Outdoor unit temperature sensor troubles
	F05	Discharge temperature sensor (TD2) trouble	
	F06	Heat exchanger temperature sensor (TE1, TE2) trouble	
	F07	Liquid temperature sensor (TL1, TL2, TL3) trouble	
	F08	Outside air temperature sensor (TO) trouble	
	F12	Suction temperature sensor (TS1,TS3) trouble	
	F13	Heat sink sensor (TH) trouble	
	F15	Wiring trouble in heat exchanger sensor (TE1) and liquid temperature sensor (TL1) Outdoor unit temperature sensor wiring/installation trouble	
	F16	Wiring trouble in outdoor high pressure sensor (Pd) and low pressure sensor (Ps) Outdoor pressure sensor wiring trouble	
	F17	Outside air suction temperature sensor (TOA) trouble	
	F18	Indoor air suction temperature sensor (TRA) trouble	
	F23	Low pressure sensor (Ps) trouble	Outdoor unit pressure sensor troubles
	F24	High pressure sensor (Pd) trouble	
	F29	Fault in indoor EEPROM	
	H01	Compressor breakdown	Outdoor unit compressor or A-3-IPDU related troubles
	H02	Compressor lockup	
	H03	Current detection circuit trouble	
	H05	Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD1)	
	H06	Abnormal drop in low-pressure sensor (Ps) reading	Protective shutdown of outdoor unit
	H07	Abnormal drop in oil level	
	H08	Trouble in temperature sensor for oil level detection circuit (TK1, TK2, TK4 or TK5)	
	H15	Wiring/installation trouble or detachment of outdoor discharge temperature sensor (TD2)	
	H16	Oil level detection circuit trouble - Trouble in outdoor unit TK1, TK2, TK4 or TK5 circuit	
	L02	Outdoor unit model unmatched trouble	
	L03	Duplicated indoor group header unit	
	L05	Duplicated priority indoor unit (as displayed on priority indoor unit)	
	L06	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	
	L07	Connection of group control cable to stand-alone indoor unit	
	L08	Indoor group address not set	
	L09	Indoor capacity not set	
	L04	Duplicated outdoor refrigerant line address	
	L10	Outdoor capacity not set	
	L20	Duplicated central control address	
	L23	SW setting mistake	
	L24	Flow selector unit(s) setting trouble	
	L28	Too many outdoor units connected	
	L29	Trouble in number of IPDUs	
	L30	Indoor external interlock trouble	

Light block	Check code	Cause of fault
	F31	Outdoor EEPROM trouble

Other (indications not involving check code)

Light block	Check code	Cause of fault
	–	Test run in progress
	–	Setting incompatibility (automatic cooling/heating setting for model incapable of it and heating setting for cooling-only model)

8-4. Check Codes Displayed on Remote Control and SMMS-e Outdoor Unit (7-Segment Display on I/F Board) and Locations to Be Checked

For other types of outdoor units, refer to their own service manuals.

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
E01	—	—	Remote control	Indoor-remote control communication trouble (detected at remote control end)	Stop of corresponding unit	Communication between indoor P.C. board and remote control is disrupted.	• Check remote control inter-unit tie cable (A/B). • Check for broken wire or connector bad contact. • Check indoor power supply. • Check for defect in indoor P.C. board. • Check remote control address settings (when two remote controls are in use). • Check remote control P.C. board.
E02	—	—	Remote control	Remote control transmission trouble	Stop of corresponding unit	Signal cannot be transmitted from remote control to indoor unit.	• Check internal transmission circuit of remote control. --- Replace remote control as necessary.
E03	—	—	Indoor unit	Indoor-remote control communication trouble (detected at indoor end)	Stop of corresponding unit	There is no communication from remote control (including wireless) or network adaptor.	• Check remote control and network adaptor wiring.
E04	—	—	Indoor unit	Indoor-outdoor communication circuit trouble (detected at indoor end)	Stop of corresponding unit	Indoor unit is not receiving signal from outdoor unit.	• Check order in which power was turned on for indoor and outdoor units. • Check indoor address setting. • Check indoor-outdoor tie cable. • Check outdoor terminating resistor setting (SW30, Bit 2).
E06	E06	No. of indoor units from which signal is received normally	I/F	Signal lack of indoor unit	All stop	Indoor unit initially communicating normally fails to return signal for specified length of time.	• Check power supply to indoor unit. (Is power turned on?) • Check connection of indoor-outdoor communication cable. • Check connection of communication connectors on indoor P.C. board. • Check connection of communication connectors on outdoor P.C. board. • Check for defect in indoor P.C. board. • Check for defect in outdoor P.C. board (I/F).
—	E07	—	I/F	Indoor-outdoor communication circuit trouble (detected at outdoor end)	All stop	Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.	• Check outdoor terminating resistor setting (SW30, Bit 2). • Check connection of indoor-outdoor communication circuit.
E08	E08	Duplicated indoor address	Indoor unit I/F	Duplicated indoor address	All stop	More than one indoor unit are assigned same address.	• Check indoor addresses. • Check for any change made to remote control connection (group/individual) since indoor address setting.
E09	—	—	Remote control	Duplicated master remote control	Stop of corresponding unit	In two remote control configuration (including wireless), both controls are set up as master. (Header indoor unit is shut down with alarm, while follower indoor units continue operating.)	• Check remote control settings. • Check remote control P.C. boards.
E10	—	—	Indoor unit	Indoor inter-MCU communication trouble	Stop of corresponding unit	Communication cannot be established/maintained upon turning on of power or during communication.	• Check for defect in indoor P.C. board
E12	E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	I/F	Automatic address starting trouble	All stop	• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress. • Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.	• Perform automatic address setting again after disconnecting communication cable to that refrigerant line.
E15	E15	—	I/F	Indoor unit not found during automatic address setting	All stop	Indoor unit cannot be detected after indoor automatic address setting is started.	• Check connection of indoor-outdoor communication line. • Check for trouble in indoor power supply system. • Check for noise from other devices. • Check for power failure. • Check for defect in indoor P.C. board.

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
E16	E16	00: Overloading 01-: No. of units connected	I/F	Too many indoor units connected	All stop	• Combined capacity of indoor units exceeds 135% of combined capacity of outdoor units. **Note:** **If this code comes up after backup setting for outdoor unit failure is performed, perform "No overloading detected" setting.** <"No overloading detected" setting method> Turn on SW09/Bit 2 on I/F P.C. board of outdoor header unit. • More than 64 indoor units are connected.	• Check capacities of indoor units connected. • Check combined HP capacities of indoor units. • Check HP capacity settings of outdoor units. • Check No. of indoor units connected. • Check for defect in outdoor P.C. board (I/F).
E18	—	—	Indoor unit	Trouble in communication between indoor header and follower units	Stop of corresponding unit	Periodic communication between indoor header and follower units cannot be maintained.	• Check remote control wiring. • Check indoor power supply wiring. • Check P.C. boards of indoor units.
E19	E19	00: No header unit 02: Two or more header units	I/F	Trouble in number of outdoor header units	All stop	• There are more than one outdoor header units in one line. • There is no outdoor header unit in one line.	Outdoor header unit is outdoor unit to which indooroutdoor tie cable (U1,U2) is connected. • Check connection of indoor-outdoor communication line. • Check for defect in outdoor P.C. board (I/F).
E20	E20	01: Connection of outdoor unit from other line 02: Connection of indoor unit from other line	I/F	Connection to other line found during automatic address setting	All stop	Equipment from other line is found to have been connected when indoor automatic address setting is in progress.	Disconnect inter-line tie cable in accordance with automatic address setting method explained in "Address setting" section.
E23	E23	—	I/F	Outdooroutdoor communication transmission trouble	All stop	Signal cannot be transmitted to other outdoor units for at least 30 seconds continuously.	• Check power supply to outdoor units. (Is power turned on?) • Check connection of tie cables between outdoor units for bad contact or broken wire. • Check communication connectors on outdoor P.C. boards. • Check for defect in outdoor P.C. board (I/F). • Check termination resistance setting for communication between outdoor units.
E25	E25	—	I/F	Duplicated follower outdoor address	All stop	There is duplication in outdoor addresses set manually.	**Note:** **Do not set outdoor addresses manually.**
E26	E26	Address of outdoor unit from which signal is not received normally	I/F	Signal lack of outdoor unit	All stop	Outdoor unit initially communicating normally fails to return signal for specified length of time.	• Backup setting is being used for outdoor units. • Check power supply to outdoor unit. (Is power turned on?) • Check connection of tie cables between outdoor units for bad contact or broken wire. • Check communication connectors on outdoor P.C. boards. • Check for defect in outdoor P.C. board (I/F).
E28	E28	Detected outdoor unit No.	I/F	Outdoor follower unit trouble	All stop	Outdoor header unit receives trouble code from outdoor follower unit.	• Check check code displayed on outdoor follower unit. <Convenient functions> If SW04 is pressed and held for at least 1 second while [E28] is displayed on the 7-segment display of outdoor header unit, the fan of the outdoor unit that has been shut down due to an trouble comes on. If SW04 and SW05 are pressed simultaneously, the fans of normal outdoor units come on. To stop the fan or fans, press SW05 on its own.

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
E31	E31	<table><tr><th></th><th colspan="2">A3-IPDU</th><th colspan="2">Fan-IPDU</th></tr><tr><th></th><th>1</th><th>2</th><th>1</th><th>2</th></tr><tr><td>01</td><td>O</td><td></td><td></td><td></td></tr><tr><td>02</td><td></td><td>O</td><td></td><td></td></tr><tr><td>03</td><td>O</td><td>O</td><td>O</td><td></td></tr><tr><td>08</td><td></td><td></td><td>O</td><td></td></tr><tr><td>09</td><td>O</td><td></td><td>O</td><td></td></tr><tr><td>0A</td><td></td><td>O</td><td>O</td><td></td></tr><tr><td>0B</td><td>O</td><td>O</td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td>O</td></tr><tr><td>11</td><td>O</td><td></td><td></td><td>O</td></tr><tr><td>12</td><td></td><td>O</td><td></td><td>O</td></tr><tr><td>13</td><td>O</td><td>O</td><td>O</td><td>O</td></tr><tr><td>18</td><td></td><td></td><td>O</td><td>O</td></tr><tr><td>19</td><td>O</td><td></td><td>O</td><td>O</td></tr><tr><td>1A</td><td></td><td>O</td><td>O</td><td>O</td></tr><tr><td>1B</td><td>O</td><td>O</td><td></td><td>O</td></tr></table>Circle (O): IPDU trouble	I/F	IPDU communication trouble	All stop	Communication is disrupted between IPDUs (P.C. boards) in inverter box.	• Check wiring and connectors involved in communication between IPDU-I/F P.C. board for bad contact or broken wire. • Check for defect in outdoor P.C. board (I/F, A3-IPDU or Fan IPDU). • Check for external noise.
		80		Communication trouble between MCU and Sub MCU	All stop	Communication between MCU and Sub MCU stopped.	• Operation of power supply reset (OFF for 60 seconds or more) • Outdoor I/F PC board trouble check.
F01	—	—	Indoor unit	Indoor TCJ sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TCJ sensor connector and wiring. • Check resistance characteristics of TCJ sensor. • Check for defect in indoor P.C. board.
F02	—	—	Indoor unit	Indoor TC2 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TC2 sensor connector and wiring. • Check resistance characteristics of TC2 sensor. • Check for defect in indoor P.C. board.
F03	—	—	Indoor unit	Indoor TC1 sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TC1 sensor connector and wiring. • Check resistance characteristics of TC1 sensor. • Check for defect in indoor P.C. board.
F04	F04	—	I/F	TD1 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TD1 sensor connector. • Check resistance characteristics of TD1 sensor. • Check for defect in outdoor P.C. board (I/F).
F05	F05	—	I/F	TD2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TD2 sensor connector. • Check resistance characteristics of TD2 sensor. • Check for defect in outdoor P.C. board (I/F).
F06	F06	01: TE1 sensor trouble 02: TE2 sensor trouble	I/F	TE1/TE2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TE1/TE2 sensor connectors. • Check resistance characteristics of TE1/TE2 sensors. • Check for defect in outdoor P.C. board (I/F).
F07	F07	01: TL1 sensor trouble	I/F	TL1 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TL1/TL2/TL3 sensor connector. • Check resistance characteristics of TL1/TL2/TL3 sensor. • Check for defect in outdoor P.C. board (I/F).
F08	F08	—	I/F	TO sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TO sensor connector. • Check resistance characteristics of TO sensor. • Check for defect in outdoor P.C. board (I/F).
F09	F09	01: TG1 sensor trouble 02: TG2 sensor trouble	I/F	TG1/TG2	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TG1/TG2 sensor connectors. • Check resistance characteristics of TG1/TG2 sensors. • Check for defect in outdoor P.C. board (I/F).
F10	—	—	Indoor unit	Indoor TA sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TA sensor connector and wiring. • Check resistance characteristics of TA sensor. • Check for defect in indoor P.C. board.
F11	—	—	Indoor unit	Indoor TF sensor trouble	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TF sensor connector and wiring. • Check resistance characteristics of TF sensor. • Check for defect in indoor P.C. board.

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
F12	F12	01: TS1 sersor trouble 03: TS2 sersor trouble	I/F	TS1/TS2 sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TS1/TS3 sensor connector. • Check resistance characteristics of TS1/TS3 sensor. • Check for defect.
F13	F13	01: Compressor 1 side 02: Compressor 2 side	IPDU	TH sensor trouble	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Defect in IPM built-in temperature sensor → Replace A3-IPDU P.C. board.
F15	F15	—	I/F	Outdoor temperature sensor wiring trouble (TE1, TL1)	All stop	During compressor operation in HEAT mode, TL1 continuously provides temperature reading higher than indicated by TL1 by at least specified margin for 3 minutes or more.	• Check installation of TE1 and TL1 sensors. • Check resistance characteristics of TE1 and TL1 sensors. • Check for outdoor P.C. board (I/F) trouble.
F16	F16	—	I/F	Outdoor pressure sensor wiring trouble (Pd, Ps)	All stop	Readings of high-pressure Pd sensor and lowpressure Ps sensor are switched. Output voltages of both sensors are zero.	• Check connection of highpressure Pd sensor connector. • Check connection of lowpressure Ps sensor connector. • Check for defect in pressure sensors Pd and Ps. • Check for trouble in outdoor P.C. board (I/F). • Check for deficiency in compressive output of compressor.
F23	F23	—	I/F	Ps sensor trouble	All stop	Output voltage of Ps sensor is zero.	• Check for connection trouble involving Ps sensor and Pd sensor connectors. • Check connection of Ps sensor connector. • Check for defect in Ps sensor. • Check for deficiency in compressive output of compressor. • Check for defect in 4-way valve. • Check for defect in outdoor P.C. board (I/F). • Check for defect in SV4 circuit.
F24	F24	—	I/F	Pd sensor trouble	All stop	Output voltage of Pd sensor is zero (sensor open-circuited). Pd > 4.15MPa despite compressor having been turned off.	• Check connection of Pd sensor connector. • Check for defect in Pd sensor. • Check for defect in outdoor P.C. board (I/F).
F29	—	—	Indoor unit	Other indoor trouble	Stop of corresponding unit	Indoor P.C. board does not operate normally.	• Check for defect in indoor P.C. board (faulty EEPROM)
F31	F31	—	I/F	Outdoor EEPROM trouble	All stop *1	Outdoor P.C. board (I/F) does not operate normally.	• Check power supply voltage. • Check power supply noise. • Check for defect in outdoor P.C. board (I/F).
H01	H01	01: Compressor 1 side 02: Compressor 2 side	IPDU	Compressor breakdown	All stop	Inverter current detection circuit detects overcurrent and shuts system down.	• Check power supply voltage. (AC460V ± 10%). • Check for defect in compressor. • Check for possible cause of abnormal overloading. • Check for defect in outdoor P.C. board (A3-IPDU).
H02	H02	01: Compressor 1 side 02: Compressor 2 side	IPDU	Compressor trouble (lockup) MG-CTT trouble	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	• Check for defect in compressor. • Check power supply voltage. (AC460V ± 10%). • Check compressor system wiring, particularly for open phase. • Check connection of connectors/ terminals on A3-IPDU P.C. board. • Check conductivity of case heater. (Check for refrigerant problem inside compressor.) • Check for defect in outdoor P.C. board (A3-IPDU). • Check outdoor MG-CTT.
H03	H03	01: Compressor 1 side 02: Compressor 2 side	IPDU	Current detection circuit trouble	All stop	Current flow of at least specified magnitude is detected despite inverter compressor having been shut turned off.	• Check current detection circuit wiring. • Check defect in outdoor P.C. board (A3-IPDU).
H05	H05	—	I/F	TD1 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of compressor 1 (TD1) does not increase despite compressor being in operation.	• Check installation of TD1 sensor. • Check connection of TD1 sensor connector and wiring. • Check resistance characteristics of TD1 sensor. • Check for defect in outdoor P.C. board (I/F).

*1 Total shutdown in case of header unit
Continued operation in case of follower unit

MG-CTT: Magnet contactor

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
H06	H06	—	I/F	Activation of low-pressure protection	All stop	Low-pressure Ps sensor detects operating pressure lower than 0.02MPa.	• Check service valves to confirm full opening (both gas and liquid sides). • Check outdoor PMVs for clogging (PMV1). • Check for defect in SV2 or SV4 circuits. • Check for defect in lowpressure Ps sensor. • Check indoor filter for clogging. • Check valve opening status of indoor PMV. • Check refrigerant piping for clogging. • Check operation of outdoor fan (during heating). • Check for insufficiency in refrigerant quantity.
H07	H07	—	I/F	Low oil level protection	All stop	Operating compressor detects continuous state of low oil level for about 2 hours.	<All outdoor units in corresponding line to be checked> • Check balance pipe service valve to confirm full opening. • Check connection and installation of TK1, TK2, TK4, and TK5 sensors. • Check resistance characteristics of TK1, TK2, TK4, and TK5 sensors. • Check for gas or oil leak in same line. • Check for refrigerant problem inside compressor casing. • Check SV3A, SV3B, SV3C, SV3D valves for defect. • Check oil return circuit of oil separator for clogging. • Check oil equalizing circuit for clogging.
H08	H08	01: TK1 sensor trouble 02: TK2 sensor trouble 04: TK4 sensor trouble 05: TK5 sensor trouble	I/F	Trouble in temperature sensor for oil level detection	All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TK1 sensor connector. • Check resistance characteristics of TK1 sensor. • Check for defect in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TK2 sensor connector. • Check resistance characteristics of TK2 sensor. • Check for defect in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TK4 sensor connector. • Check resistance characteristics of TK4 sensor. • Check for defect in outdoor P.C. board (I/F).
					All stop	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TK5 sensor connector. • Check resistance characteristics of TK5 sensor. • Check for defect in outdoor P.C. board (I/F).
H15	H15	—	I/F	TD2 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of (TD2) does not increase despite compressor 2 being in operation.	• Check installation of TD2 sensor. • Check connection of TD2 sensor connector and wiring. • Check resistance characteristics of TD2 sensor. • Check for defect in outdoor P.C. board (I/F).

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
H16	H16	01: TK1 oil circuit trouble 02: TK2 oil circuit trouble 04: TK4 oil circuit trouble 05: TK5 oil circuit trouble	I/F	Oil level detection circuit trouble	All stop	No temperature change is detected by TK1 despite compressor 1 having been started.	• Check for disconnection of TK1 sensor. • Check resistance characteristics of TK1 sensor. • Check for connection trouble involving TK1, TK2, , TK4, and TK5 sensors • Check for clogging in oil equalizing circuit capillary and faulty operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK2 despite compressor 2 having been started.	• Check for disconnection of TK2 sensor. • Check resistance characteristics of TK2 sensor. • Check for connection trouble involving TK1, TK2, , TK4, and TK5 sensors • Check for clogging in oil equalizing circuit capillary and faulty operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK4 despite compressor having been started.	• Check for disconnection of TK4 sensor. • Check resistance characteristics of TK4 sensor. • Check for connection trouble involving TK1, TK2, , TK4, and TK5 sensors • Check for clogging in oil equalizing circuit capillary and faulty operation in check valve. • Check for refrigerant entrapment inside compressor.
						No temperature change is detected by TK4 despite compressor having been started.	• Check for disconnection of TK5 sensor. • Check resistance characteristics of TK5 sensor. • Check for connection trouble involving TK1, TK2, , TK4, and TK5 sensors • Check for clogging in oil equalizing circuit capillary and faulty operation in check valve. • Check for refrigerant entrapment inside compressor.
L02	L02	—	Indoor unit	Outdoor units model disagreement trouble	Stop of corresponding unit	In case of different outdoor unit (Not corresponded to Air to Air Heat Exchanger type)	• Check outdoor unit model. (Check whether the outdoor unit corresponds to Air to Air Heat Exchanger type or not.)
L03	—	—	Indoor unit	Duplicated indoor header unit	Stop of corresponding unit	There are more than one header units in group.	• Check indoor addresses. • Check for any change made to remote control connection (group/individual) since indoor address setting.
L04	L04	—	I/F	Duplicated outdoor line address	All stop	There is duplication in line address setting for outdoor units belonging to different refrigerant piping systems.	• Check line addresses.
L05	—	—	I/F	Duplicated priority indoor unit (as displayed on priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	• Check display on priority indoor unit.
L06	L06	No. of priority indoor units	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor units have been set up as priority indoor unit.	• Check displays on priority indoor unit and outdoor unit.
L07	—	—	Indoor unit	Connection of group control cable to standalone indoor unit	Stop of corresponding unit	There is at least one standalone indoor unit to which group control cable is connected.	• Check indoor addresses.
L08	L08	—	Indoor unit	Indoor group / addresses not set	Stop of corresponding unit	Address setting has not been performed for indoor units.	• Check indoor addresses. **Note:** **This code is displayed when power is turned on for the first time after installation.**

<table>
<tr><th colspan="3">Check code</th><th rowspan="3">Location of detection</th><th rowspan="3">Description</th><th rowspan="3">System status</th><th rowspan="3">Trouble detection condition(s)</th><th rowspan="3">Check items (locations)</th></tr>
<tr><th rowspan="2">Main remote control</th><th colspan="2">Outdoor 7-segment display</th></tr>
<tr><th>Check code</th><th>Sub-code</th></tr>
<tr><td>L09</td><td>—</td><td>—</td><td>Indoor unit</td><td>Indoor capacity not set</td><td>Stop of corresponding unit</td><td>Capacity setting has not been performed for indoor unit.</td><td>Set indoor capacity. (DN = 11)</td></tr>
<tr><td>L10</td><td>L10</td><td>—</td><td>I/F</td><td>Outdoor capacity not set</td><td>All stop</td><td>Jumper wire provided on P.C. board for servicing I/F P.C. board has not been removed as required for given model.</td><td>Check model setting of P.C. board for servicing outdoor I/F P.C. board.</td></tr>
<tr><td>L20</td><td>—</td><td>—</td><td>Network adaptor Indoor unit</td><td>Duplicated central control address</td><td>All stop</td><td>There is duplication in central control address setting.</td><td>• Check central control addresses.
• Check network adaptor P.C. board .</td></tr>
<tr><td>L23</td><td>—</td><td>—</td><td>I/F</td><td>SW setting mistake</td><td>All stop</td><td>Outdoor P.C. board (I/F) does not operate normally.</td><td>• Check switch setting of Bit 3 and 4 of SW17 in outdoor P.C. board (I/F).</td></tr>
<tr><td>L28</td><td>L28</td><td>—</td><td>I/F</td><td>Too many outdoor units connected</td><td>All stop</td><td>There are more than three outdoor units.</td><td>• Check No. of outdoor units connected (Only up to 3 units per system allowed).
• Check communication lines between outdoor units.
• Check for defect in outdoor P.C. board (I/F).</td></tr>
<tr><td>L29</td><td>L29</td><td>
<table>
<tr><th></th><th colspan="2">A3-IPDU</th><th colspan="2">Fan-IPDU</th></tr>
<tr><th></th><th>1</th><th>2</th><th>1</th><th>2</th></tr>
<tr><td>01</td><td>O</td><td></td><td></td><td></td></tr>
<tr><td>02</td><td></td><td>O</td><td></td><td></td></tr>
<tr><td>03</td><td>O</td><td>O</td><td></td><td></td></tr>
<tr><td>08</td><td></td><td></td><td>O</td><td></td></tr>
<tr><td>09</td><td>O</td><td></td><td>O</td><td></td></tr>
<tr><td>0A</td><td></td><td>O</td><td>O</td><td></td></tr>
<tr><td>0B</td><td>O</td><td>O</td><td>O</td><td></td></tr>
<tr><td>10</td><td></td><td></td><td></td><td>O</td></tr>
<tr><td>11</td><td>O</td><td></td><td></td><td>O</td></tr>
<tr><td>12</td><td></td><td>O</td><td></td><td>O</td></tr>
<tr><td>13</td><td>O</td><td>O</td><td></td><td>O</td></tr>
<tr><td>18</td><td></td><td></td><td>O</td><td>O</td></tr>
<tr><td>19</td><td>O</td><td></td><td>O</td><td>O</td></tr>
<tr><td>1A</td><td></td><td>O</td><td>O</td><td>O</td></tr>
<tr><td>1B</td><td>O</td><td>O</td><td>O</td><td>O</td></tr>
</table>
Circle (O): IPDU trouble</td><td>I/F</td><td>Trouble in No. of IPDUs</td><td>All stop</td><td>Insufficient number of IPDUs are detected when power is turned on.</td><td>• Check model setting of P.C. board for servicing outdoor I/F P.C. board.
• Check connection of UART communication connector.
• Check A3-IPDU, fan IPDU, and I/F P.C. board for defect.</td></tr>
<tr><td>L30</td><td>L30</td><td>Detected indoor address</td><td>Indoor unit</td><td>External interlock of indoor unit</td><td>Stop of corresponding unit</td><td>• Signal is present at external trouble input terminal (CN80) for 1 minute.</td><td>When external device is connected to CN80 connector:
1) Check for defect in external device.
2) Check for defect in indoor P.C. board.
When external device is not connected to CN80 connector:
1) Check for defect in indoor P.C. board.</td></tr>
<tr><td>—</td><td>L31</td><td>—</td><td>I/F</td><td>Extended IC trouble</td><td>Continued operation</td><td>There is part failure in P.C. board (I/F).</td><td>Check outdoor P.C. board (I/F).</td></tr>
<tr><td>P01</td><td>—</td><td>—</td><td>Indoor unit</td><td>Indoor fan motor trouble</td><td>Stop of corresponding unit</td><td></td><td>• Check the lock of fan motor (AC fan).
• Check wiring.</td></tr>
<tr><td>P03</td><td>P03</td><td>—</td><td>I/F</td><td>Discharge temperature TD1 trouble</td><td>All stop</td><td>Discharge temperature (TD1) exceeds 239°F (115°C).</td><td>• Check outdoor service valves (gas side, liquid side) to confirm full opening.
• Check outdoor PMVs (PMV1, 3) for clogging.
• Check resistance characteristics of TD1 sensor.
• Check for insufficiency in refrigerant quantity.
• Check for defect in 4-way valve.
• Check for leakage of SV4 circuit.
• Check SV4 circuit (wiring or installation trouble in SV41 or SV42).</td></tr>
</table>

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
P04	P04	01: Compressor 1 side 02: Compressor 2 side	IPDU	Activation of high-pressure SW	All stop	High-pressure SW is activated.	• Check connection of highpressure SW connector. • Check for defect in Pd pressure sensor. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check for defect in outdoor fan. • Check for defect in outdoor fan motor. • Check outdoor PMVs (PMV1, 4) for clogging. • Check indoor/outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction/discharge air flows. • Check SV2 circuit for clogging. • Check for defect in outdoor P.C. board (I/F). • Check for trouble in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for faulty operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check SV5 valve circuit. • Check for refrigerant overcharging.
P05	P05	00: 01: Compressor 1 side 02: Compressor 2 side	I/F	Detection of open phase/ phase sequence Inverter DC voltage (Vdc) trouble (compressor) MG-CTT trouble	All stop	• Open phase is detected when power is turned on. • Inverter DC voltage is too high (overvoltage) or too low (undervoltage).	• Check for defect in outdoor P.C. board (I/F). • Check wiring of outdoor power supply.
P07	P07	01: Compressor 1 side 02: Compressor 2 side	IPDU I/F	Heat sink overheating trouble	All stop	Temperature sensor built into IPM (TH) is overheated.	• Check power supply voltage. • Check outdoor fan system trouble. • Check heat sink cooling duct for clogging. • Check IPM and heat sink for thermal performance for faulty installation. (e.g. mounting screws and thermal conductivity) • Check for defect in A3-IPDU. (faulty IPM built-in temperature sensor (TH))
P13	P13	—	I/F	Outdoor liquid backflow detection trouble	All stop	<During cooling operation> When system is in cooling operation, high pressure is detected in follower unit that has been turned off. <During heating operation> When system is in heating operation, outdoor PMV 1 or 3 continuously registers opening of 300p or less while under superheat control.	• Check full-close operation of outdoor PMV (1, 3, 4). • Check for defect in Pd or Ps sensor. • Check gas balancing circuit (SV2) for clogging. • Check balance pipe. • Check SV3B circuit for clogging. • Check defect in outdoor P.C. board (I/F). • Check capillary of oil separator oil return circuit for clogging. • Check for leakage of check valve in discharge pipe convergent section.

MG-CTT: Magnet contactor

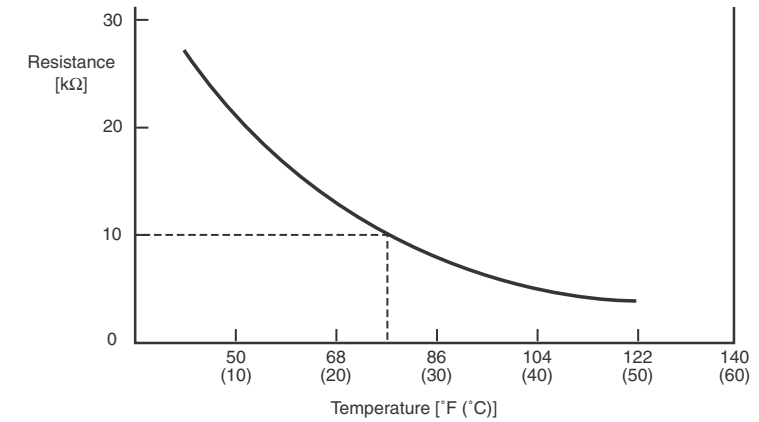
Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
P15	P15	01: TS condition	I/F	Gas leakdetection (TS1 condition)	All stop	Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more. <TS trouble judgment criterion> In cooling operation: 140°F (60°C) In heating operation: 104°F (40°C)	• Check for insufficiency in refrigerant quantity. • Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check PMVs (PMV1, 3) for clogging. • Check resistance characteristics of TS1 sensor. • Check for defect in 4-way valve. • Check SV4 circuit for leakage
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protective shutdown due to sustained discharge temperature (TD1 or TD2) at or above 226.4°F (108°C) for at least 10 minutes is repeated four times or more.	• Check for insufficiency in refrigerant quantity. • Check PMVs (PMV 1, 3) for clogging. • Check resistance characteristics of TD1 and TD2 sensors. • Check indoor filter for clogging. • Check piping for clogging. • Check SV4 circuit (for leakage or coil installation trouble).
P17	P17	—	I/F	Discharge temperature TD2 trouble	All stop	Discharge temperature (TD2) exceeds 239°F (115°C).	• Check outdoor service valves (gas side, liquid side) to confirm full opening. • Check outdoor PMVs (PMV1, 3, 4) for clogging. • Check resistance characteristics of TD2 sensor. • Check for defect in 4-way valve. • Check SV4 circuit for leakage. • Check SV4 circuit (for wiring or installation trouble involving SV41 and SV42).
P19	P19	Detected outdoor unit No.	I/F	4-way valve reversing trouble	All stop	Abnormal refrigerating cycle data is collected during heating operation.	• Check for defect in main body of 4-way valve. • Check for coil defect in 4-way valve and loose connection of its connector. • Check resistance characteristics of TS1 and TE1,TE2 sensors. • Check output voltage characteristics of Pd and Ps pressure sensors. • Check for wiring trouble involving TE1 and TL1 sensors.
P20	P20	—	I/F	Activation of high-pressure protection	All stop	<During cooling operation> Pd sensor detects pressure equal to or greater than 558.25 psi (3.85 MPa). <During heating operation> Pd sensor detects pressure equal to or greater than 522 psi (3.6 MPa).	• Check for defect in Pd pressure sensor. • Check service valves (gas side, liquid side) to confirm full opening. • Check for defect in outdoor fan. • Check for defect in outdoor fan motor. • Check outdoor PMV (PMV1, 3, 4) for clogging. • Check indoor/outdoor heat exchangers for clogging. • Check for short-circuiting of outdoor suction/ discharge air flows. • Check SV2 circuit for clogging. • Check for defect in outdoor P.C. board (I/F). • Check for defect in indoor fan system (possible cause of air flow reduction). • Check opening status of indoor PMV. • Check indoor-outdoor communication line for wiring trouble. • Check for faulty operation of check valve in discharge pipe convergent section. • Check gas balancing SV4 valve circuit. • Check SV5 valve circuit. • Check for refrigerant overcharging.

Check code			Location of detection	Description	System status	Trouble detection condition(s)	Check items (locations)
Main remote control	Outdoor 7-segment display						
	Check code	Sub-code					
P22	P22	#0:Element short circuit	IPDU	Outdoor fan IPDU trouble *Put in Fan IPDU No. in [#] mark	All stop	(Sub code: #0) Fan IPDU over current protection circuit. Flow of current equal to or greater than the specified value is detected during startup of the fan.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
		#1:Position detection circuit trouble			All stop	(Sub code: #1) Fan IPDU position detection circuit. Position detection is not going on normally.	• Check fan motor. • Check connection of fan motor • connector. • Check for defect in fan IPDU P.C. • board.
		#3:Motor lock trouble			All stop	(Sub code: #3) Gusty wind, an obstruction, or another external factor. Speed estimation is not going on normally.	• Check fan motor. • Check for defect in fan IPDU P.C. • board.
		#4:Motor current trouble			All stop	(Sub code: #4) Fan IPDU over current protection circuit. Flow of current equal to or greater than the specified value is detected during operation of the fan.	• Check fan motor. • Check connection of fan motor connector. • Check for defect in fan IPDU P.C. board.
		#C:TH sensor temperature trouble			All stop	(Sub code: #C) Higher temperature than the specified value is detected during operation of the fan.	• Check fan motor. • Check for defect in fan IPDU P.C. board.
		#D:TH sensor short circuit/release trouble			All stop	(Sub code: #D) The resistance value of the sensor is infinite or zero (open or short circuit).	• Check for defect in fan IPDU P.C. board.
		#E:Vdc voltage trouble			All stop	(Sub code: #E) Fan IPDU DC voltage protection circuit. The DC voltage higher or lower than the specified value is detected.	• Check power voltage of the main power supply. • Check for defect in fan IPDU P.C. board. • Check connection of fan IPDU P.C. board.
P26	P26	01: Compressor 1 side 02: Compressor 2 side	IPDU	IPM shortcircuit protection trouble	All stop	Overcurrent is momentarily detected during startup of compressor.	• Check connector connection and wiring on A3-IPDU P.C. board. • Check for defect in compressor (layer shortcircuit). • Check for defect in outdoor P.C. board (A3-IPDU).
P29	P29	01: Compressor 1 side 02: Compressor 2 side	IPDU	Compressor position detection circuit trouble	All stop	Position detection is not going on normally.	• Check wiring and connector connection. • Check for compressor layer short-circuit. • Check for defect in A3-IPDU P.C. board.
P31	—	—	Indoor unit	Other indoor trouble (group follower unit trouble)	Stop of corresponding unit	There is trouble in other indoor unit in group, resulting in detection of E07/L07/L03/L08.	• Check indoor P.C. board.
C05	—	—	TCC-LINK	TCC-LINK central control device transmission trouble	Continued operation	Central control device is unable to transmit signal.	• Check for defect in central control device. • Check for defect in central control communication line. • Check termination resistance setting.
C06	—	—	TCC-LINK	TCC-LINK central control device reception trouble	Continued operation	Central control device is unable to transmit signal.	• Check for defect in central control device. • Check for defect in central control communication line. • Check terminator resistor setting. • Check power supply for devices at other end of central control communication line. • Check defect in P.C. boards of devices at other end of central control communication line.
C12	—	—	General-purpose device I/F	Batch alarm for general-purpose device control interface	Continued operation	Trouble signal is input to control interface for general-purpose devices.	• Check trouble input.
P30	Differs according to nature of alarm-causing trouble		TCC-LINK	Group control follower unit trouble	Continued operation	Trouble occurs in follower unit under group control. ([P30] is displayed on central remote control.)	• Check check code of unit that has generated alarm.
	(L20 displayed.)			Duplicated central control address	Continued operation	There is duplication in central control addresses.	• Check address settings.

8-5. Sensor Characteristics

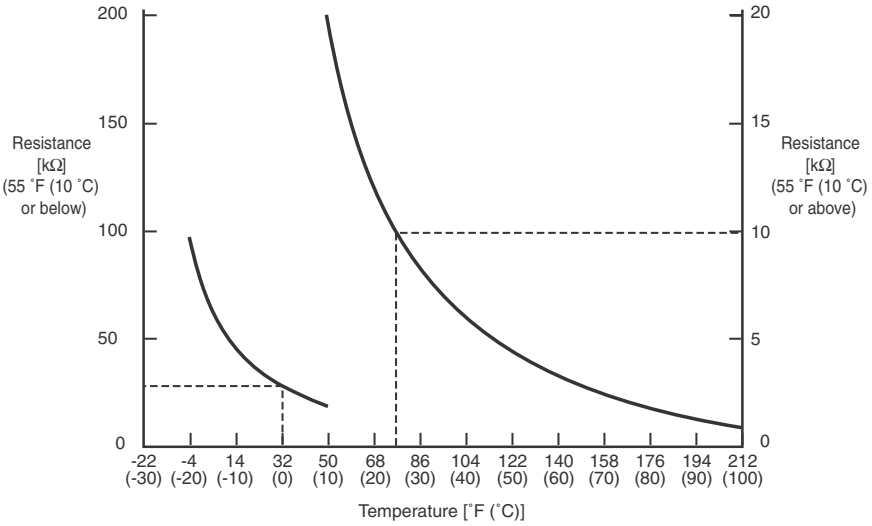
Indoor Unit

■ Temperature sensor characteristics



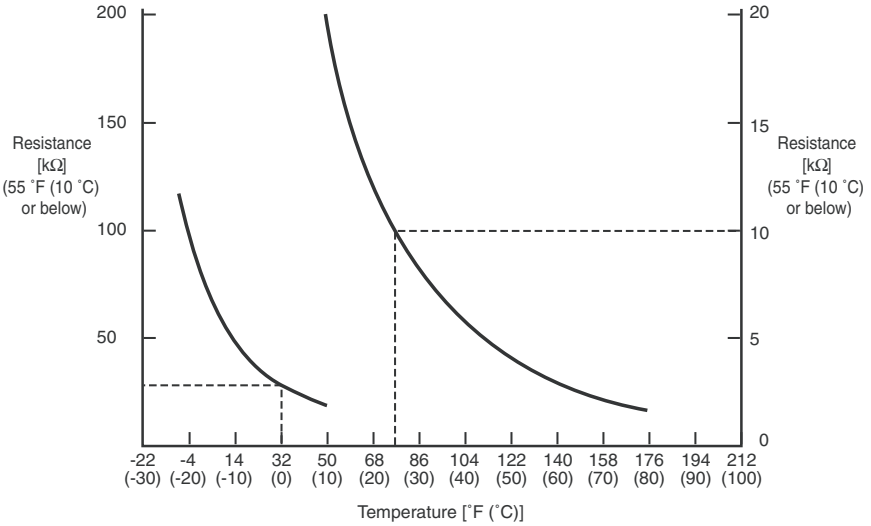
Temperature [˚F (˚C)]	Resistance [kΩ]
32 (0)	33.9
41 (5)	26.1
50 (10)	20.3
59 (15)	15.9
68 (20)	12.6
77 (25)	10.0
86 (30)	8.0
95 (35)	6.4
104 (40)	5.2
113 (45)	4.2
122 (50)	3.5
131 (55)	2.8
140 (60)	2.4

Indoor TC1 sensor



Temperature [˚F (˚C)]	Resistance [kΩ]
-4 (-20)	99.9
5 (-15)	74.1
14 (-10)	55.6
23 (-5)	42.2
32 (0)	32.8
41 (5)	25.4
50 (10)	19.8
59 (15)	15.6
68 (20)	12.4
77 (25)	10.0
86 (30)	8.1
95 (35)	6.5
104 (40)	5.3
113 (45)	4.4
122 (50)	3.6
131 (55)	3.0
140 (60)	2.5
149 (65)	2.1
158 (70)	1.8
167 (75)	1.5
176 (80)	1.3
185 (85)	1.1
194 (90)	1.0
203 (95)	0.8
212 (100)	0.7

Indoor TC2 and TCJ sensors



Temperature [˚F (˚C)]	Resistance [kΩ]
-4 (-20)	115.2
5 (-15)	84.2
14 (-10)	62.3
23 (-5)	46.6
32 (0)	35.2
41 (5)	26.9
50 (10)	20.7
59 (15)	16.1
68 (20)	12.6
77 (25)	10.0
86 (30)	8.0
95 (35)	6.4
104 (40)	5.2
113 (45)	4.2
122 (50)	3.5
131 (55)	2.8
140 (60)	2.4
149 (65)	2.0
158 (70)	1.6
167 (75)	1.4
176 (80)	1.2

9. DETACHMENTS

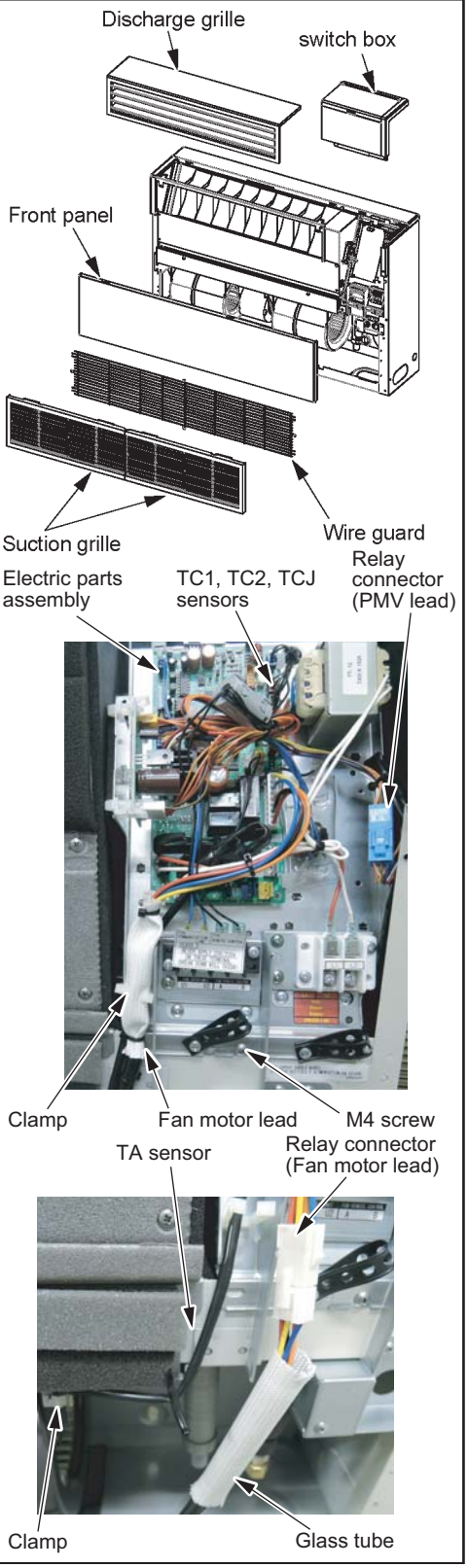
9-1. Floor Console Exposed Type

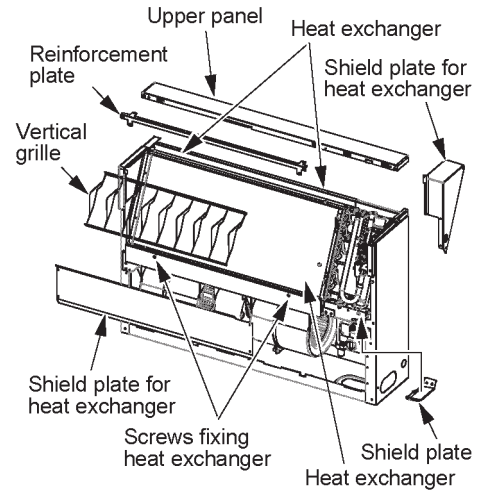
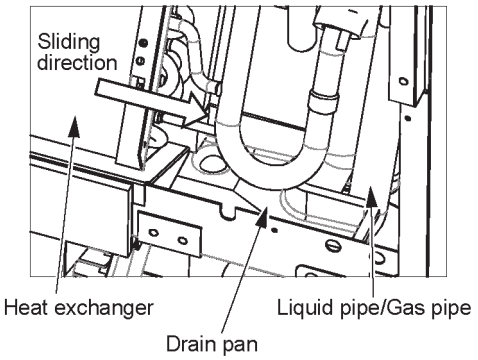
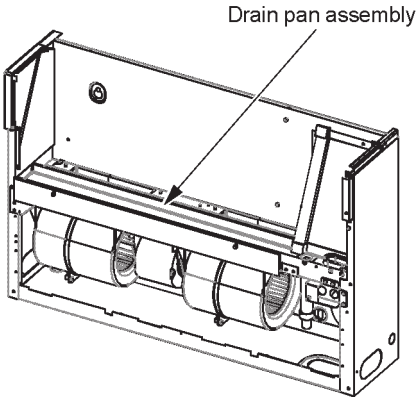
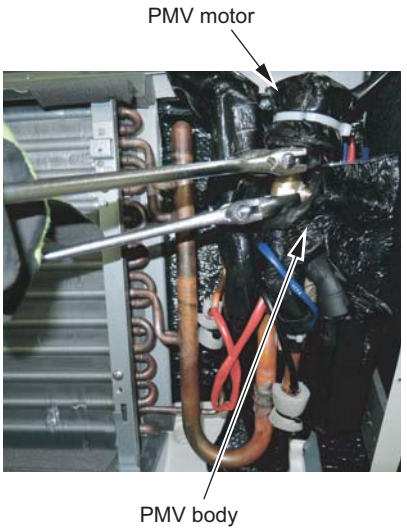
⚠ WARNING

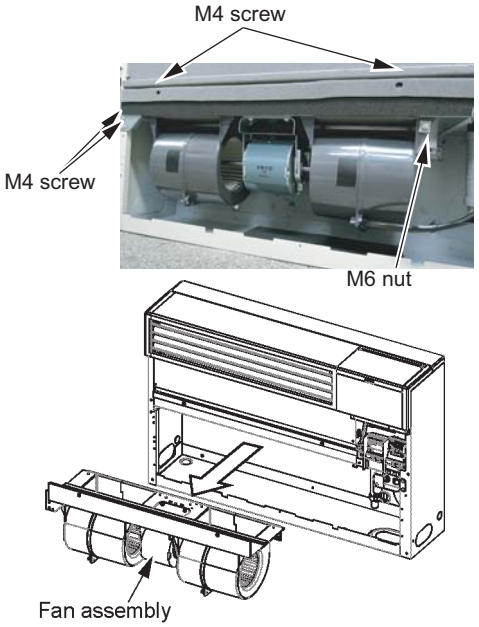
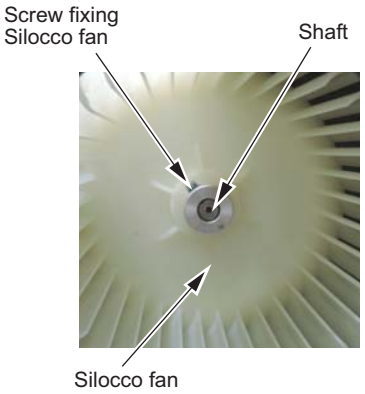
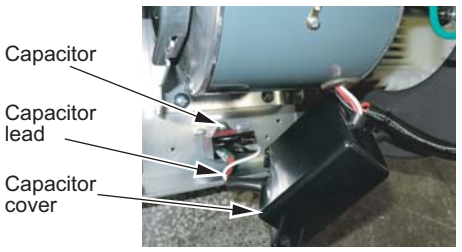
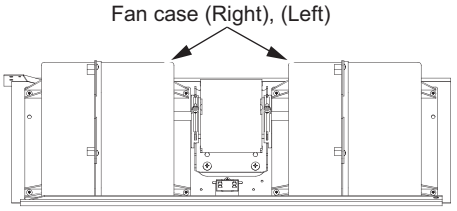
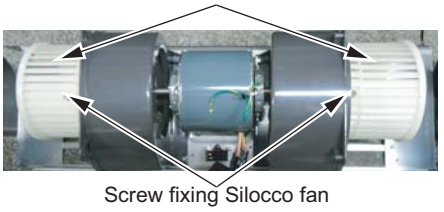
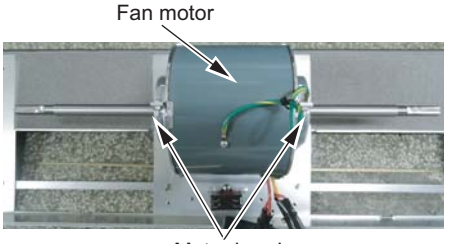
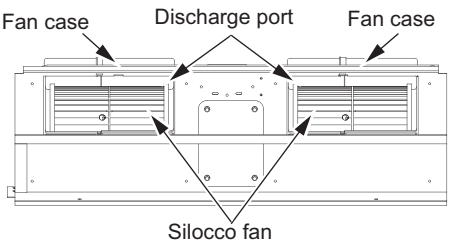
Be sure to turn off the power supply and the breaker and then start a work.

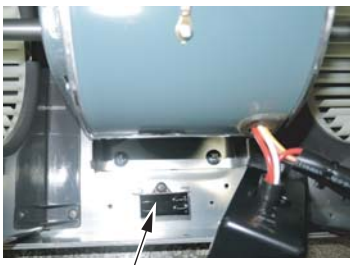
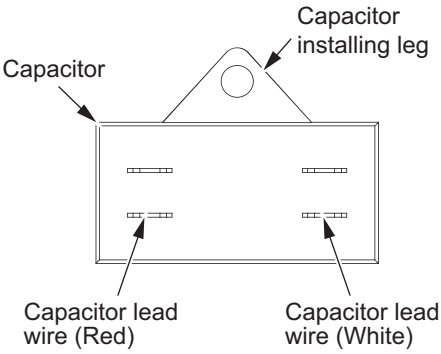
⚠ CAUTION

Be sure to put on the gloves at disassembling work; otherwise an injury will be caused by a part, etc.

No.	Spare parts	Work procedure	Remarks
①	Electric parts assembly	**1. Detachment** (1) Remove the suction grilles (2 pieces). (No screw fixing) (2) Remove the wire guard. (M4 screw: 4 pieces) (3) Remove the front panel. (M4 screw: 2 pieces) (4) Remove the discharge grille. (M4 x 0.8" (20L): 2 pieces) (5) Remove the switch box. (M4 screw: 3 pieces) (6) Take off the fan motor lead from the clamp, slide the glass tube, and then remove the relay connector. (7) Take off the TA sensor from the clamp. (8) Take off the connectors of TC1, TC2, and TCJ sensors from P.C. board. CN100...TC1 (3P: Brown) CN101...TC2 (2P: Black) CN102...TCJ (2P: Red) * Unlock the lock of the housing part, and then remove the connectors. (9) Remove the relay connector of the PMV lead. (10) Remove body of the electric parts assembly. (M4 screw: 1) **2. Attachment** Following step 1 of ① and (1) to (10), attach the parts as original in the reverse procedure.	

No.	Spare parts	Work procedure	Remarks
②	Refrigerant cycle assembly	**1. Detachment** (1) Recover the refrigerant gas. (2) Take off the connecting pipe. (Liquid pipe and gas pipe) (3) Following to works 1 of ① , and (1) to (10), detach the parts. (4) Take off the reinforcement plate. (M4 screw: 2 pieces) (5) Remove the upper panel) (M4 screws: 4 pieces) (6) Remove the vertical grille. (M4 screws: 4 pieces) (7) Remove the shield plate for heat exchanger (Front). (M4 screws: 3 pieces) (8) Remove the shield plate for heat exchanger (Right). (M4 screws: 3 pieces) (9) Take off the screws which fix the heat exchanger. (M4 screws: 4 pieces) (10) Remove the shield plate. (M4 screws: 2 pieces) (11) Slide the heat exchanger horizontally, release liquid pipe, gas pipe from the drain pan, and then pull out it to the upper side. **2. Attachment** Following step 1 of ② and those in (1) to (11), attach the parts as original in the reverse procedure.	 
③	Drain pan assembly	**1. Detachment** (1) Following step 1 of ② and those in (1) to (11), detach the parts. (2) Remove the drain pan assembly. **2. Attachment** Following step 1 in ③ and those in (1) to (2), attach the parts as original in the reverse procedure.	
④	PMV motor	**1. Detachment** (1) Following step 1 of ② and those in (3) to (8), detach the parts. (2) Peel bityl rubber which is adhered to the PMV body, loosen the nut fixing the PMV motor with a double spanner, and then remove the PMV motor. **2. Attachment** Following step 1 of ④ and (1) to (2), attach the parts as original by the reverse procedure. * Control the tightening torque between PMV body and PMV motor at 5.8 ± 0.7 ft•lbs (7.84 ± 0.98 N•m).	

No.	Spare parts	Work procedure	Remarks
⑤	Fan assembly	**1. Detachment** (1) Following step 1 of ① , (1) to (3), (6)and (7), detach the parts. (2) Take off the nut which fixes the fan assembly. (M6 nut: 1 position) (3) Draw out the fan assembly toward you. (M4 screws: 4 pieces) **2. Attachment** Following step 1 of ④ , and (1) to (3), attach the parts as original in the reverse procedure.	
⑥	Fan motor	**1. Detachment** (1) Following step 1 of ④ and (1) to (3), detach the parts. (2) Take off the capacitor lead from the capacitor. (M4 screws: 2 pieces) (3) Take off the screws at (right) and (left) of the fan case. (M4 screws: 8 pieces, M4 x 0.47" (12L): 4 pieces) (4) Remove the fan case at the outside. (5) Loosen screws of the Silocco fan to remove the Silocco fan. (6) Loosen the fixing screws of the fan motor, and then remove the fan motor. (M4 x 0.47" (12L): 2 pieces) **2. Attachment** Following step 1 of ⑤ and (1) to (5), attach the parts as original in the reverse procedure. * When attaching the Silocco fan, meet the fixing screw for Silocco fan to the notch position on the shaft of the fan motor. * After fixing the fan case, adjust the position of Silocco fan at the center of the fan case from side of the discharge port so that the Silocco fan does not hit to the fan case. * For the tightening torque of the screw fixing the Silocco fan, control between 3.7 to 3.8 ft•lbs (5.0 to 5.2 N•m). 	    

No.	Spare parts	Work procedure	Remarks
⑦	Capacitor	**1. Detachment** (1) Following step 1 of ⑤ and (1) to (2), detach the parts. (2) Remove the capacitor. (M4 screw: 1 position) **2. Attachment** Following step 1 of ⑥ , and (1) to (3), attach the parts as original in the reverse procedure. * Be sure to connect the capacitor lead to the specified position of the capacitor.	 Capacitor  Connecting position of capacitor lead

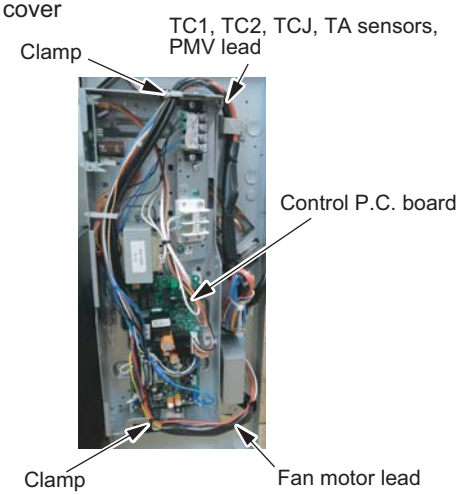
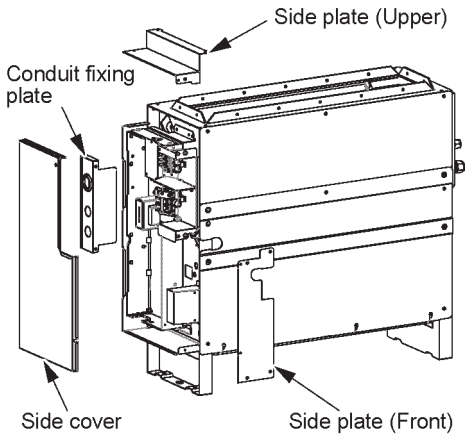
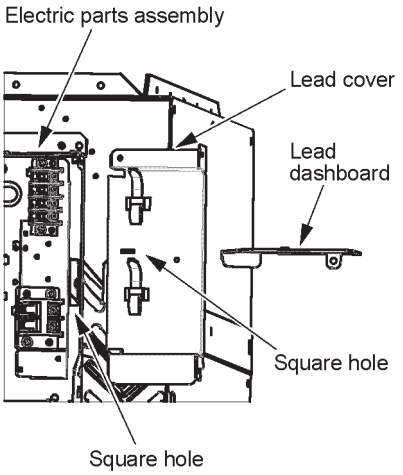
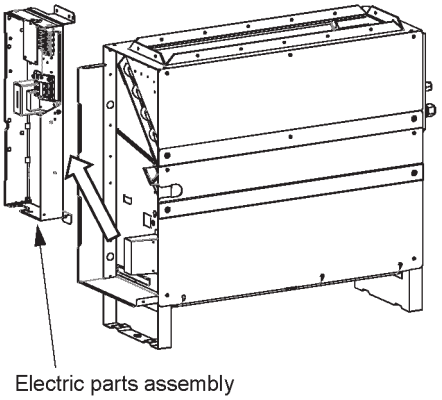
9-2. Floor Console Recessed Type

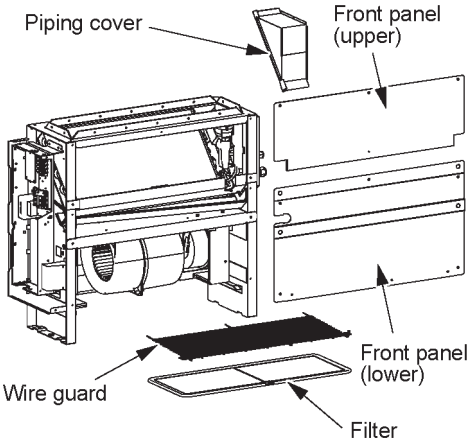
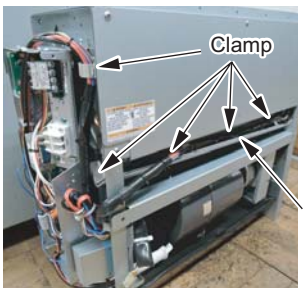
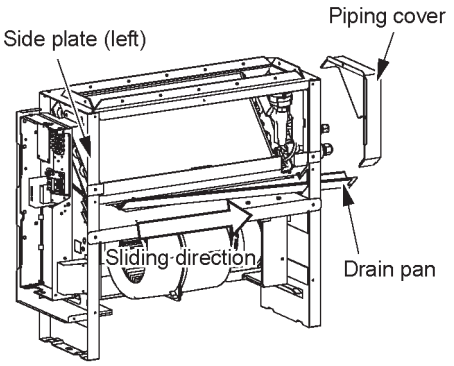
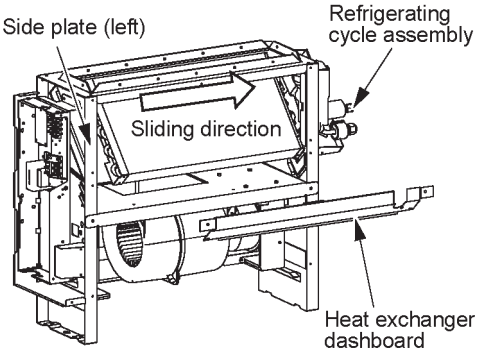
⚠ WARNING

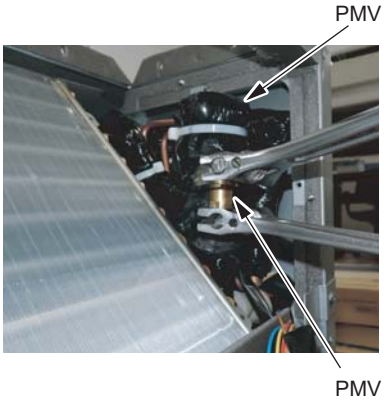
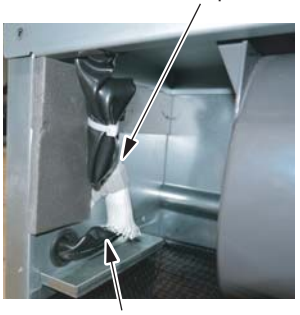
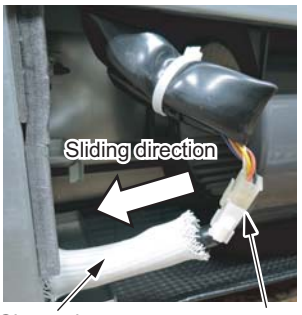
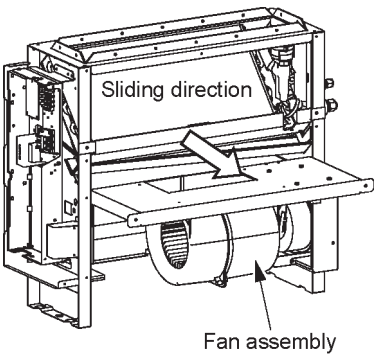
Be sure to turn off the power supply and the breaker and then start a work.

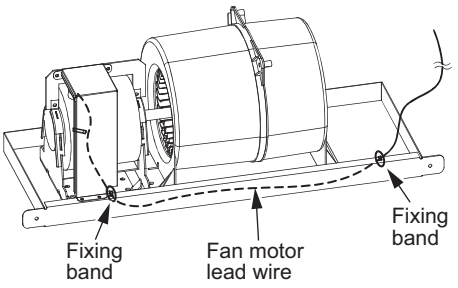
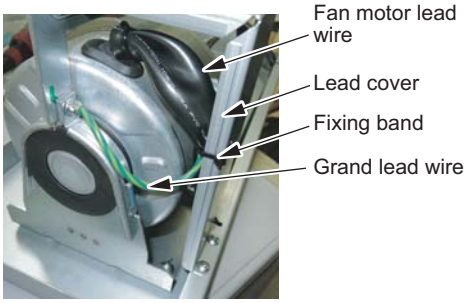
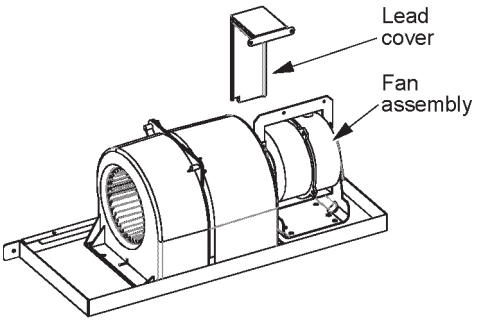
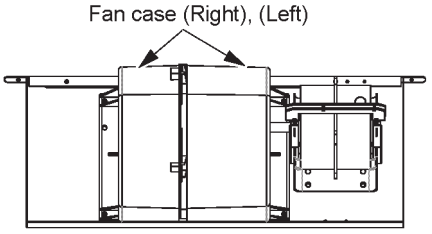
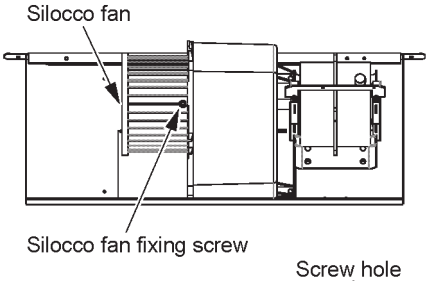
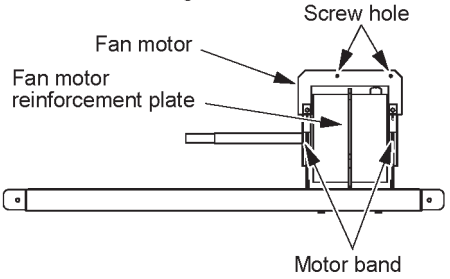
⚠ CAUTION

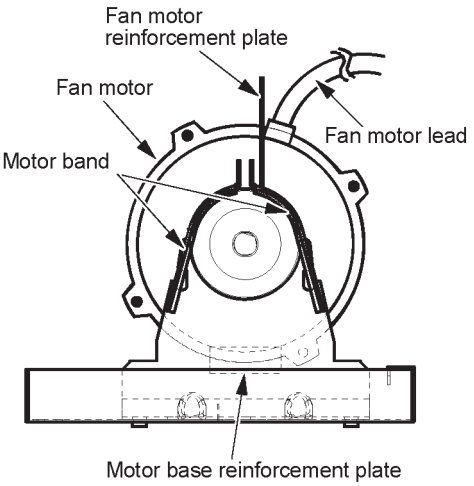
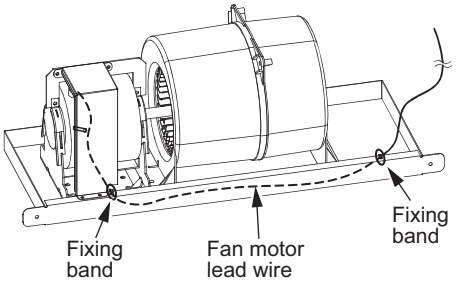
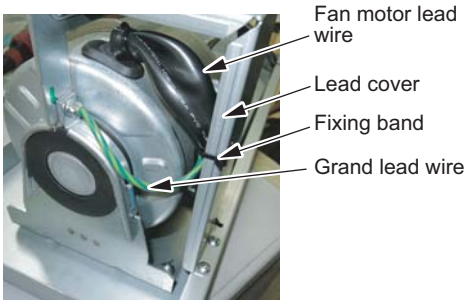
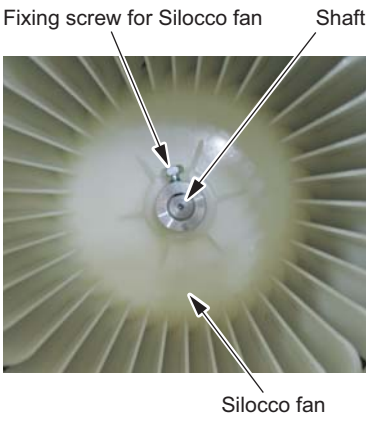
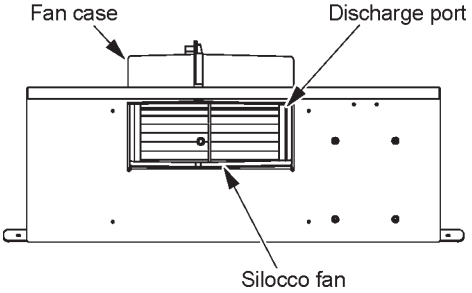
Be sure to put on the gloves at disassembling work; otherwise an injury will be caused by a part etc.

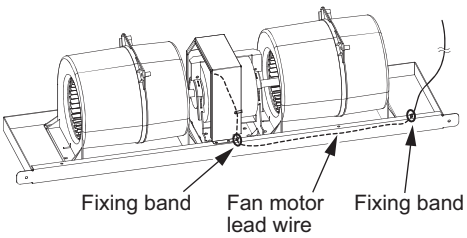
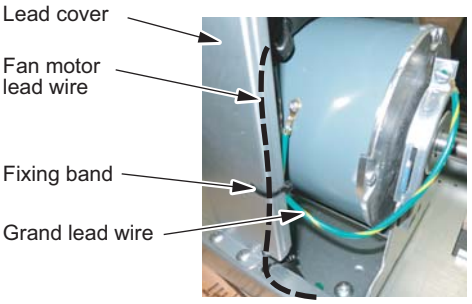
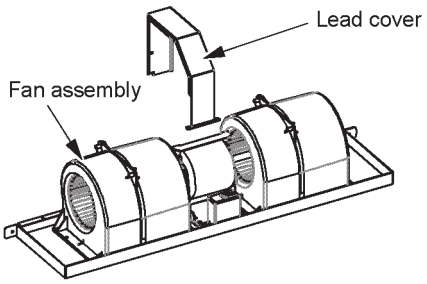
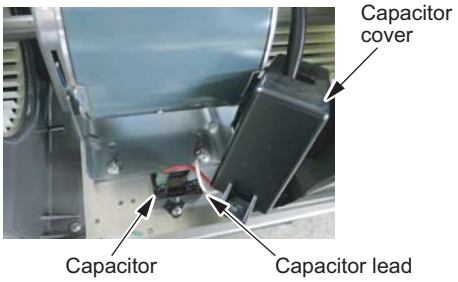
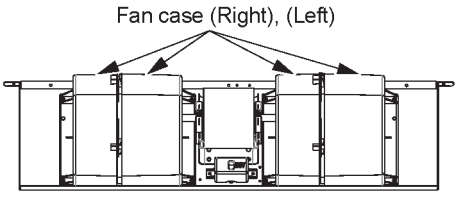
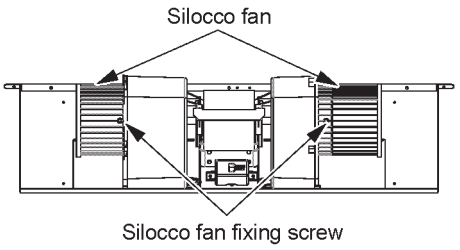
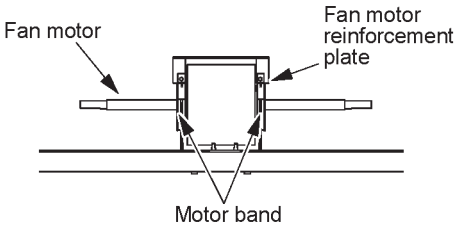
No.	Spare parts	Work procedure	Remarks
①	Electric parts assembly	**1. Detachment** (1) Remove the side cover. (M4 screws: 2 pieces) (2) Remove conduit fixing plate. (M4 screws: 2 pieces) (3) Remove the side plate (Front). (M4 screws: 4 pieces) (4) Remove the side plate (Upper) (M4 screws: 4 pieces) (5) Remove the dashboard of lead. (M4 screw: 1 piece) (6) Remove the lead cover. (No screw fixing) (7) Remove connecting connectors (TC1, TC2, TCJ, TA sensor, PMV lead) of the control P.C. board. Take of the lead wire from the clamp of the electric parts box. CN100...TC1 (3P; Brown) CN101...TC2 (2P; Black) CN102...TCJ (2P; Red) CN104...TA (2P; Orange) CN210...Fan motor (7P; White) CN104...PMV (6P; Blue) * Remove the connectors by unlocking the locks of the housing part. (8) Take off the fixing screws of the electric parts assembly fixing screws, slide the electric parts assembly toward upper side, and then remove it. (M4 screws: 2 pieces) **2. Attachment** Following to the works in 1 of ① and (1) to (8), attach the parts as original in the reverse procedure. * Attach the lead cover by inserting the pawls of the piping covers into the square holes of the electric parts assembly. * Attach the lead dashboard also by inserting the pawls of the lead covers into the square holes of the lead cover  	  

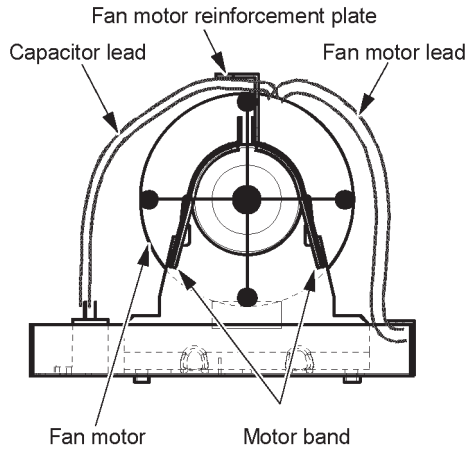
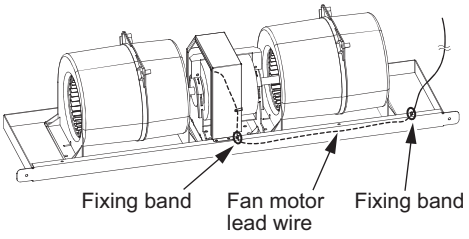
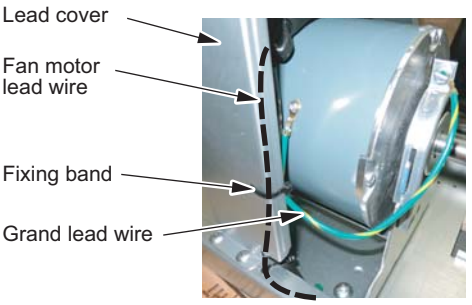
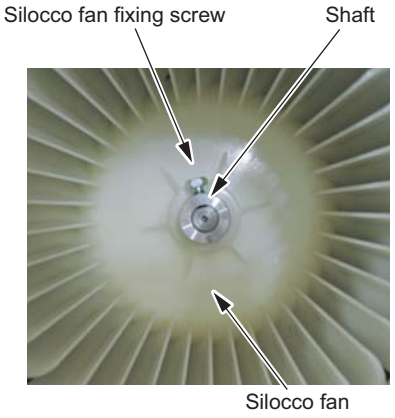
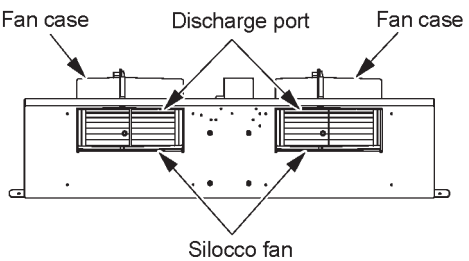
No.	Spare parts	Work procedure	Remarks
②	Refrigerating cycle assembly	**1. Detachment** (1) Recover the refrigerating gas. (2) Remove the connecting pipes. (Liquid pipe and gas pipe) (3) Following to works in 1 of ① and (1) to (7), detach the parts. (4) Remove the filter. (No screw fixing) (5) Remove the wire guard. (M4 screw AP007 to 009 : 3 pieces, and AP012 to 024 : 4 pieces) (6) Remove the front panel (lower). (M4 screw AP007 to 009 : 3 pieces, and AP012 to 024 : 4 pieces) (7) Remove the front panel (upper). (M4 screw AP007 to 009 : 3 pieces, and AP012 to 024 : 4 pieces) (8) Remove the piping cover (Left). (M4 screw: 2 pieces) (9) Remove the sensor lead and the PMV lead from the clamp. (10) Remove the piping cover (Right). (M4 screw: 3 pieces) (11) Take off the screws which fix the drain pan, slide it toward right, remove the drain pan from the side plate (Left), and then draw it toward you. (12) Remove the dashboard of the heat exchanger. (M4 screw: 4 pieces) (13) Slide the heat exchanger toward right, remove the end plate of the heat exchanger from the side plate (left), and then draw away the refrigerating cycle assembly toward you. **2. Attachment** Following to the works in 1 of ②, and (1) to (13), attach the parts as original in the reverse procedure.	   

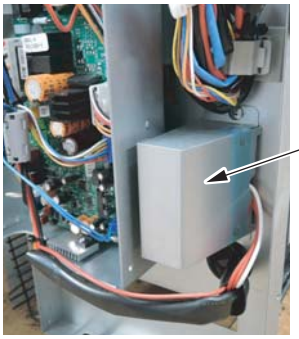
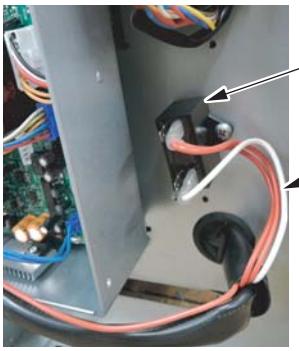
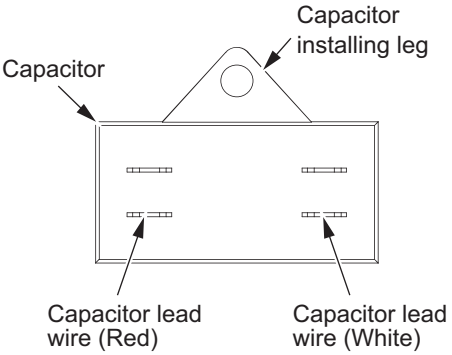
No.	Spare parts	Work procedure	Remarks
③	PMV motor	**1. Detachment** (1) Following to the works in 1 of ② and (3) to (9), detach the parts. (2) Peel butyl rubber which is adhered to the PMV body, loosen the nut fixing the PMV motor with a double spanner, and then remove the PMV motor. **2. Attachment** Following the works of 1 of ④ and (1) to (2), attach the parts as original by the reverse procedure. * Control the tightening torque between PMV body and PMV motor at 5.8 ± 0.7 ft•lbs (7.84 ± 0.98 N•m).	
④	Fan assembly	**1. Detachment** (1) Following to the works in 1 of ② of (1) and (3) to (6), detach the parts. (2) Remove the fan motor lead from the clamp. (3) Slide the glass tube fixing the fan motor lead and remove the connector. (4) Take off the fixing screws of the fan assembly and draw the fan assembly toward you. (M4 screw: 2 pieces) **2. Attachment** Following to the works in 1 of ④ , and (1) to (3), attach the parts as original in the reverse procedure.	  

No.	Spare parts	Work procedure	Remarks
⑤	Fan motor	**[AP007 to 012]** **1. Detachment** (1) Following to works of 1 of ④ and (1) to (3), detach the parts. (2) Cut off the fixing band which fixes the fan motor lead. (Two positions) (3) Cut off the fixing band fixes the lead cover and the fan motor lead, and then remove the lead cover from the fan assembly. (M4 screws: 4 pieces) (4) Take off the screws at (right) and (left) of the fan case. (M4 screws: 4 pieces, M4 x 0.47" (12L): 2 pieces) (5) Remove the fan case at the outside. (6) Loosen screws of the Silocco fan to remove the Silocco fan. (7) Loosen the fixing screws of the fan motor, and then remove the fan motor. (M4 x 0.47" (12L): 2 pieces)	     

No.	Spare parts	Work procedure	Remarks
⑤	Fan motor (Continued)	**2. Attachment** Following to works of 1 of ⑤ and (1) to (5), attach the parts as original in the reverse procedure. * When attaching the fan motor, be sure that the fan motor does not hit the motor base reinforcement plate. * When attaching the fan motor reinforcement plate, be sure that the fan motor reinforcement plate is not caught in the motor band. * Do wiring the fan motor lead to inside of the dash-board as original, and then fix it to the dash-board with the fixing band. * After attaching the lead cover, gather the fan motor lead and the earth lead and then fix them to the lead cover with the fixing band. * When attaching the fan motor reinforcement plate, be careful to the screw hole position of the fan motor reinforcement plate. * When attaching the Silocco fan, meet the fixing screw for Silocco fan to the notch position on the shaft of the fan motor. * After fixing the fan case, adjust the position of Silocco fan at the center of the fan case from side of the discharge port so that the Silocco fan does not hit to the fan case. * For the tightening torque of the screw fixing the Silocco fan, control between 3.7 to 3.8 ft•lbs (5.0 to 5.2 N•m).	    

No.	Spare parts	Work procedure	Remarks
⑤	Fan motor (Continued)	**[AP015 to 024]** **1. Detachment** (1) Following to works of 1 of ④ and (1) to (3), detach the parts. (2) Cut off the fixing band which fixes the fan motor lead. (Two positions) (3) Cut off the fixing band fixes the lead cover and the fan motor lead, and then remove the lead cover from the fan assembly. (M4 screws: 4 pieces) (4) Remove the capacitor cover from the fan assembly and remove the capacitor lead wire from the capacitor. (5) Take off the screws at (right) and (left) of the fan case. (M4 screws: 8 pieces, M4 x 0.47" (12L): 4 pieces) (6) Remove the fan case at the outside. (7) Loosen screws of the Silocco fan to remove the Silocco fan. (8) Loosen the fixing screws of the fan motor, and then remove the fan motor. (M4 x 0.47" (12L): 2 pieces)	      

No.	Spare parts	Work procedure	Remarks
⑤	Fan motor (Continued)	**2. Attachment** Following to works of 1 of ⑤ and (1) to (8), attach the parts as original in the reverse procedure. * When attaching the fan motor reinforcement plate, be sure that the fan motor reinforcement plate is not caught in the motor band. * When attaching the fan motor reinforcement plate, be careful to the direction of the fan motor reinforcement plate. * When attaching the Silocco fan, meet the fixing screw for Silocco fan to the notch position on the shaft of the fan motor. * After fixing the fan case, adjust the position of Silocco fan at the center of the fan case from side of the discharge port so that the Silocco fan does not hit to the fan case. * For the tightening torque of the screw fixing the Silocco fan, control between 3.7 to 3.8 ft•lbs (5.0 to 5.2 N•m).	    

No.	Spare parts	Work procedure	Remarks
⑥	Capacitor	**[AP007 to 012]** **1. Detachment** (1) Following to ,1 of ①, and (1) to (3), detach the parts. (2) Remove the capacitor cover and remove the capacitor lead from the capacitor. (M4 screw: 2 pieces) (3) Remove the capacitor. (M4 screw: 1 position) **2. Attachment** Following to 1 of ① , and (1) to (3), attach the parts as original in the reverse procedure.	 
		[AP015 to 024] **1. Detachment** (1) Following to ,1 of ⑥, and (1) to (2), detach the parts. (M4 screw: 2 pieces) (2) Remove the capacitor. (M4 screw: 1 position) **2. Attachment** Following to 1 of ⑥, and (1) to (2), attach the parts as original in the reverse procedure. **[AP007 to 024]** * Be sure to connect the capacitor lead to the specified position of the capacitor.	  Connecting position of capacitor lead

10. P.C. BOARD EXCHANGE PROCEDURES

■ Indoor unit

10-1. Replacement of indoor P.C. boards

Part code	Model type	P.C. board type
431-6V-586	MML-AP∗∗∗BH2UL	MCC-1403
431-6V-587	MML-AP∗∗∗H2UL	MCC-1403

Points to note when replacing indoor P.C. board assembly

The electrically erasable programmable read-only memory (hereinafter EEPROM, IC10) mounted on an indoor P.C. board holds important setting data, including the type and capacity codes intrinsic to the model (set at the factory), as well as the line / indoor / group addresses, high ceiling adjustment setting and the like (during installation, either automatically or manually). Proceed with the replacement of an indoor P.C. board assembly in accordance with the procedure described below.
After completion of the work, check the settings again, including the indoor unit No. and group header / follower designation, and confirm the integrity of the refrigerating cycle by conducting a test operation, etc.

<Replacement procedure>

Method 1

If it is possible to turn on the indoor unit and read the setting data from the P.C. board to be replaced via a wired remote control -

Reading EEPROM data: **Procedure 1**

⇩

Replacing P.C. board and turning on power: **Procedure 2**

⇩

Writing EEPROM data in new EEPROM: **Procedure 3**

⇩

Resetting power supply (applicable to all indoor units connected to remote control in case of group operation)

Method 2

If it is not possible to turn on the indoor unit or read the setting data from the P.C. board to be replaced via a wired remote control or operate the remote control due to the failure of its power supply circuit -

Replacing EEPROM (IC10) (For the location of this component and the method to replace it, see the "EEPROM location diagram" section.)

- The EEPROM on the P.C. board to be replaced needs to be removed and mounted on the service P.C. board.

⇩

Replacing P.C. board and turning on power: **Procedure 2**

⇩

Reading EEPROM data: **Procedure 1**

- If data cannot be read, go to Method 3.

⇩

Replacing EEPROM (IC10) again (For the location of this component and the method to replace it, see the " EEPROM location diagram" section.)

- The old EEPROM, supplied with the P.C. board to be replaced and now mounted on the service P.C. board, needs to be replaced with the new EEPROM, supplied with the service P.C. board.

⇩

Replacing P.C. board and turning on power: **Procedure 2**

⇩

Writing EEPROM data in new EEPROM: **Procedure 3**

⇩

Resetting power supply (applicable to all indoor units connected to remote control in case of group operation)

Method 3

If it is not possible to read the setting data due to the failure of the EEPROM itself -

Replacing P.C. board and turning on power: **Procedure 2**

⇩

Writing EEPROM data on basis of information supplied by customer (e.g. high ceiling adjustment setting and optional connection setting): **Procedure 3**

⇩

Resetting power supply (applicable to all indoor units connected to remote control in case of group operation)

Procedure 1: reading setting data from EEPROM

(Read the setting data from EEPROM, including both the factory settings and any modifications made to them on site.)

1 **Push the TEST + SET + CL buttons simultaneously and hold for at least 4 seconds. (This number corresponds to the same number shown on the Remote Control Operation Diagram.)**

* In the case of group control, the unit No. displayed first is the indoor unit No. of the header unit. At the same time, the CODE No. (DN code) 10 is displayed, and the fan of the selected indoor unit comes on, with the louver swinging, depending on the model.

2 **Each time the UNIT LOUVER button (button of left side) is pushed, one of the indoor unit No. under group control is displayed in turn.**

* The fan of the selected indoor unit comes on, with the louvers swinging, depending on the model.

3 **The TEMP. button allows you to move the CODE No. (DN code) up / down by one place.**

4 **First, change the CODE No. (DN code) from 10 to 01. (To set filter sign lighting time)**

Jot down the setting data displayed.

5 **Change the CODE No. (DN code) using the TEMP. button.**

Again, jot down the setting data displayed.

6 **Repeat step 5 until all the setting data has been jotted down. (See the CODE No. list.)**

* CODE No. (DN code) go from 01 to FF with a few gaps along the way.

7 **When finished, push the TEST button to bring the system back to normal off state.**

(It takes the system about 1 minute to become responsive to remote control operation.)

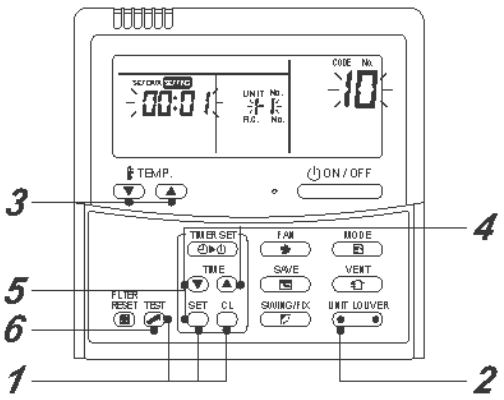
CODE No. (DN code) necessary at minimum

DN	Contents
10	Type
11	Indoor unit capacity
12	Line address
13	Indoor address
14	Group address

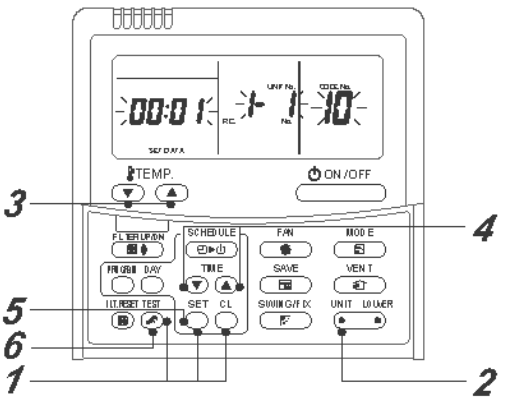
The type and capacity of the indoor unit are necessary for fan speed setting.

Remote control operation diagram

<Fig. 1 RBC-AMT32UL>



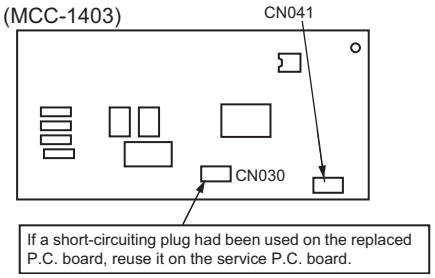
<Fig. 2 RBC-AMS41UL>



Procedure 2: replacing P.C. board

1 Replace the faulty P.C. board with a service P.C. board.

Be sure to replicate the old jumper setting (removal), and connector short-circuit setting (e.g. CN030) on the service P.C. board. (See the diagram at below.)



2 It is necessary to establish a one-to-one correspondence between the indoor unit being serviced and the remote control.

Turn on the indoor unit using one of the methods described below according to the system configuration.

(1) Single (stand-alone) operation
Turn on the indoor unit and proceed to **Procedure 3**.

(2) Group operation

A) If it is possible to selectively turn on the indoor unit being serviced
Turn on the indoor unit being serviced and proceed to **Procedure 3**.

B) If it is not possible to selectively turn on the indoor unit being serviced (**Case 1**)

a) Temporarily disconnect the group control wiring from terminals A and B of the indoor unit being serviced.

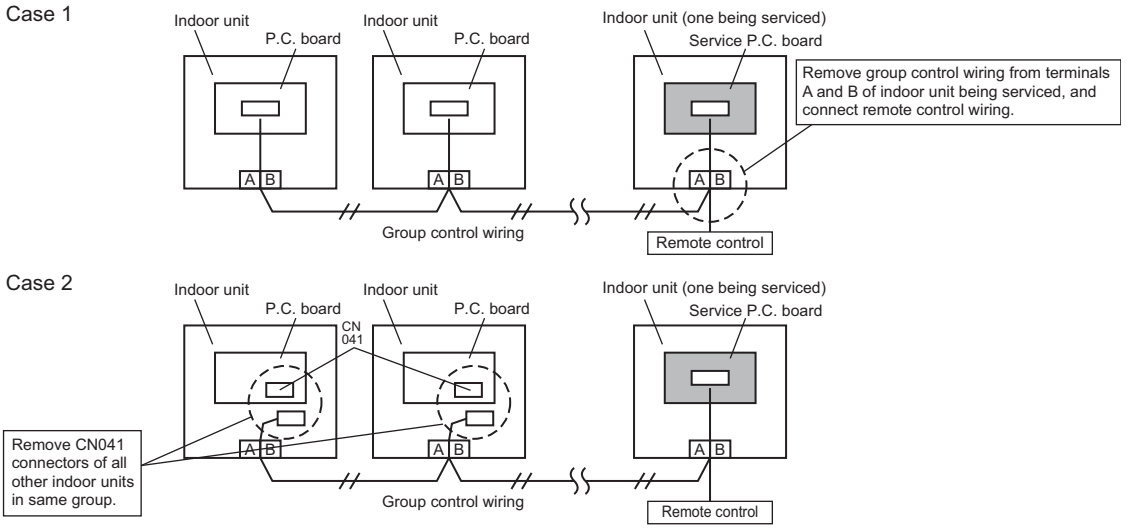
b) Connect the remote control wiring to the terminals, turn on the indoor unit, and proceed to **Procedure 3**.

***** If this method cannot be used, proceed to the alternative method described below (**Case 2**).

C) If it is not possible to selectively turn on the indoor unit being serviced (**Case 2**)

a) Remove the CN041 connectors of all other indoor units in the same group.

b) Turn on the indoor unit and proceed to **Procedure 3**.



***** Be sure to restore the temporarily removed group control wiring and CN041 connectors to their initial states after Procedure 3 has been completed.

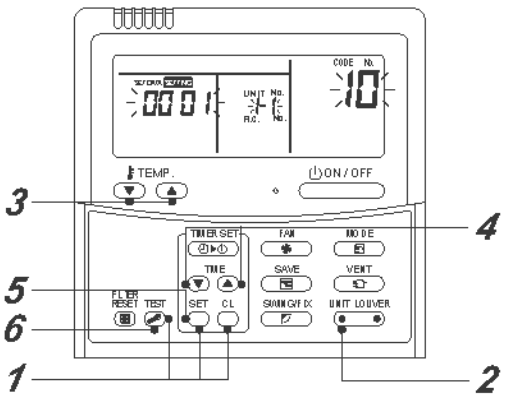
Procedure 3: writing setting data in EEPROM

(The EEPROM of the service P.C. board has been set to the factory default values.)

1 **Push the TEST + SET + CL buttons simultaneously and hold for at least 4 seconds. (This number corresponds to the same number shown on the Remote Control Operation Diagram.)**

(Under UNIT No., ALL is displayed.)
At the same time, the CODE No. (DN code) 10 is displayed, and the fan of the indoor unit comes on depending on the model.

<Fig. 1 RBC-AMT32UL>



2 **Push the left part of the UNIT LOUVER button (button of left side) to display the indoor unit No. one by one in the group control. Specify the indoor unit No. whose service PC board was replaced.**
(This operation is not available if the UNIT No. shows ALL.)

3 **The TEMP. button allows you to moved the CODE No. (DN code) up / down by one place.**

4 **First, set the type and capacity codes of the indoor unit.**

(Changing the type and capacity codes in EEPROM overwrites the factory default settings.)

(1) Set the CODE No. (DN code) to 10 (no change)
(2) Use the TIME button to select the type.
(For example, 0001 is for the 4-way cassette type.) - See the CODE No. list.
(3) Push the SET button. (The display should change from flashing to steady.)
(4) Use the TEMP. button to set the CODE No. (DN code) to 11.
(5) Use the TIME button to set the capacity code.
(For example, 0012 is for the 027 type.) - See the CODE No. list.
(6) Push the SET button. (The display should change from flashing to steady.)
(7) Push the CL button to bring the system back to normal off state.

5 **Next, write any setting changes made on-site after installation, such as address settings, in the EEPROM. Perform the tasks specified in step 1 again.**

6 **Use the TEMP. button to set the CODE No. (DN code) to 01 (To set filter sign lighting time)**

7 **Check the value displayed with the value jotted down in Procedure 1 and information proved by the customer.**

(1) If there is a discrepancy, change the setting in accordance with the jotted-down value, and push the SET button.
(The display should change from flashing to steady.)
(2) If there is no discrepancy, do nothing.

8 **Use the TEMP. button to change the CODE No. (DN code).**

Again, check the value, and change the setting if necessary.

9 **Repeat steps 6 and 7 until all the settings are checked.**

10 **When finished, push the TEST button to bring the system back to normal off state.**

In the case of group operation, turn the unit off, reconnect the indoor-indoor group control wiring and CN041 connectors, and turn on all the indoor units.
(It takes the system about 1 minute to become responsive to remote control operation.)

* CODE No. (DN code) go from 01 to FF with a few gaps along the way.
If you realize you have wrongly corrected a certain setting after pushing the SET button, you can recover the initial value by pushing the CL button, provided that the CODE No. (DN code) is yet to be changed.

EEPROM location diagram

The EEPROM (IC10) is mounted on an IC socket. Use a pair of tweezers, etc. to remove it. When installing it, adjust its orientation as shown in the diagram below.
During EEPROM removal / installation, take care not to bend IC leads.

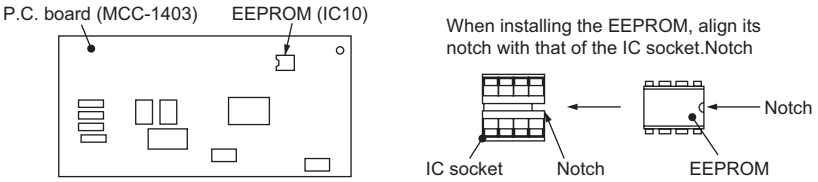


Table 2

CODE No. table (Please record the objective unit data at field)

DN	Item	Memo	At shipment
01	Filter sign lighting time		0001: 150 hour
02	Dirty state of filter		0000: Standard
03	Central control address		0099: Unfixed
06	Heating suction temp shift		0000: No shift
0C	PRE-DEF indication selection		0000: Standard
0F	Cooling only		0000: Heat pump
10	Type		Depending on model type
11	Indoor unit capacity (See below table)		According to capacity type
12	Refrigerant line address		0099: Unfixed
13	Indoor unit address		0099: Unfixed
14	Group address		0099: Unfixed
28	Automatic restart from power cut		0001:Available
2A	Option input selection (CN080)		0002: External emergency input
2b	Thermostat output selection (T10 ③)		0000: Thermostat ON
2E	Input selection (T10 ①)		0000: Operation input
32	Sensor selection		0000: Available
60	Timer set (Wired remote control)		0000: Available

Indoor unit capacity (CODE No. [11])

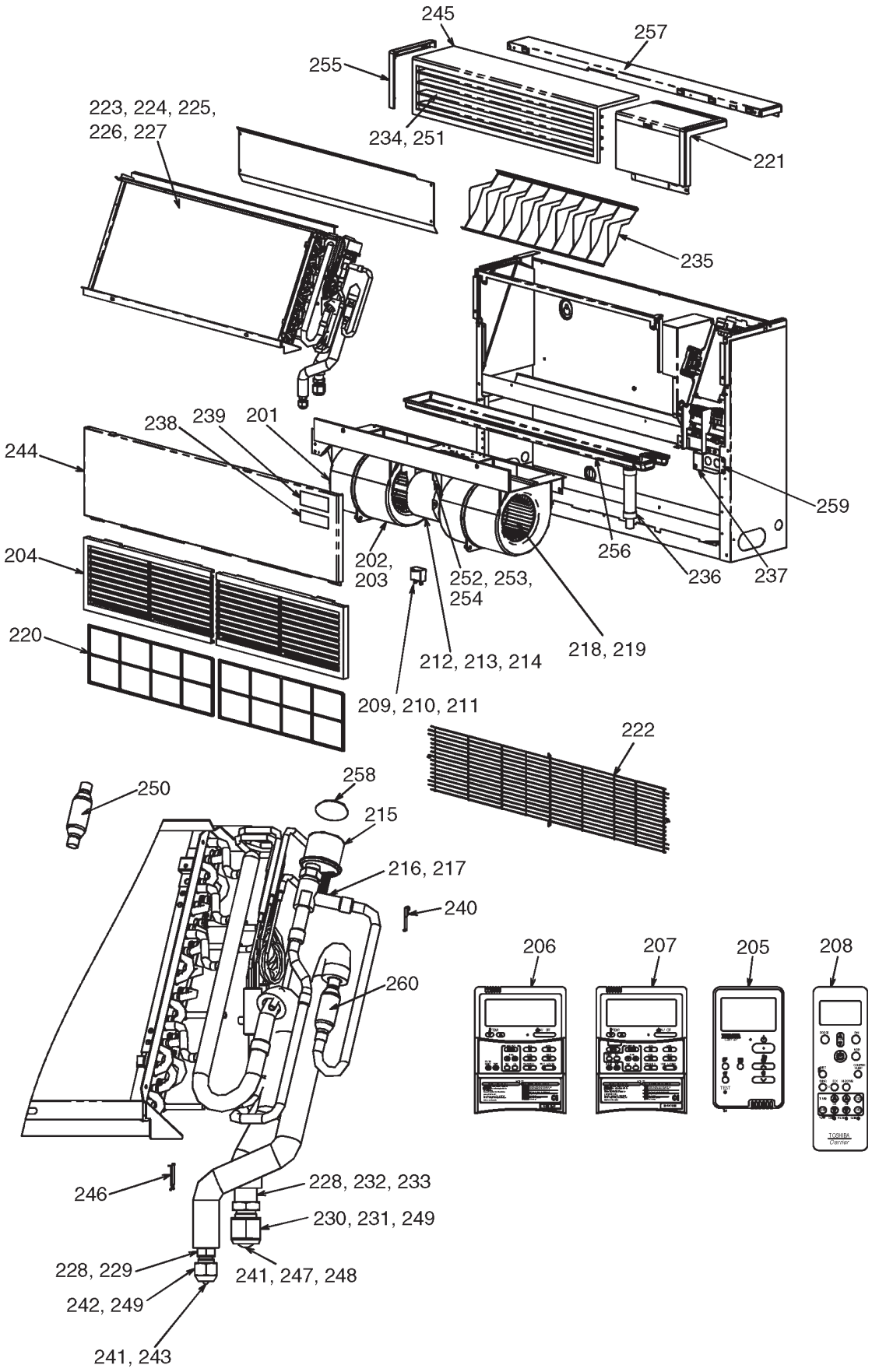
Setup data	Model	Setup data	Model
0001*	Invalid	0009	018 type
0001	007 type	0010	021 type
0002	—	0011	024 type
0003	009 type	0012	027 type
0004	—	0013	030 type
0005	012 type	0014	—
0006	—	0015	036type
0007	015 type	0017	048 type
0008	—	—	—

* Initial value of EEPROM installed on the supplied service P.C. board

11. EXPLODED VIEWS AND PARTS LIST

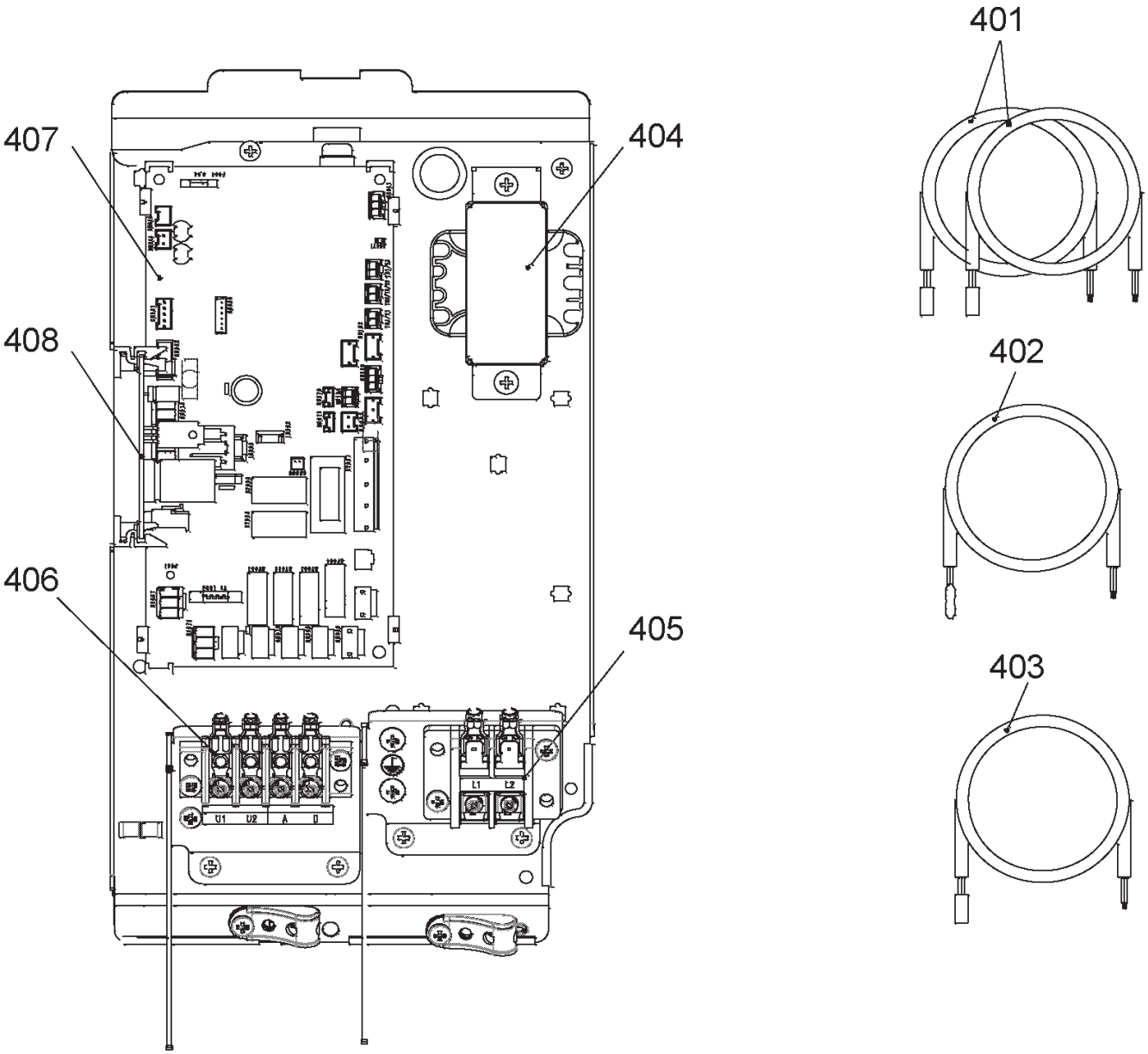
11-1. Floor Console Exposed Type

MML- AP0074H2UL, AP0094H2UL, AP0124H2UL, AP0154H2UL, AP0184H2UL, AP0244H2UL



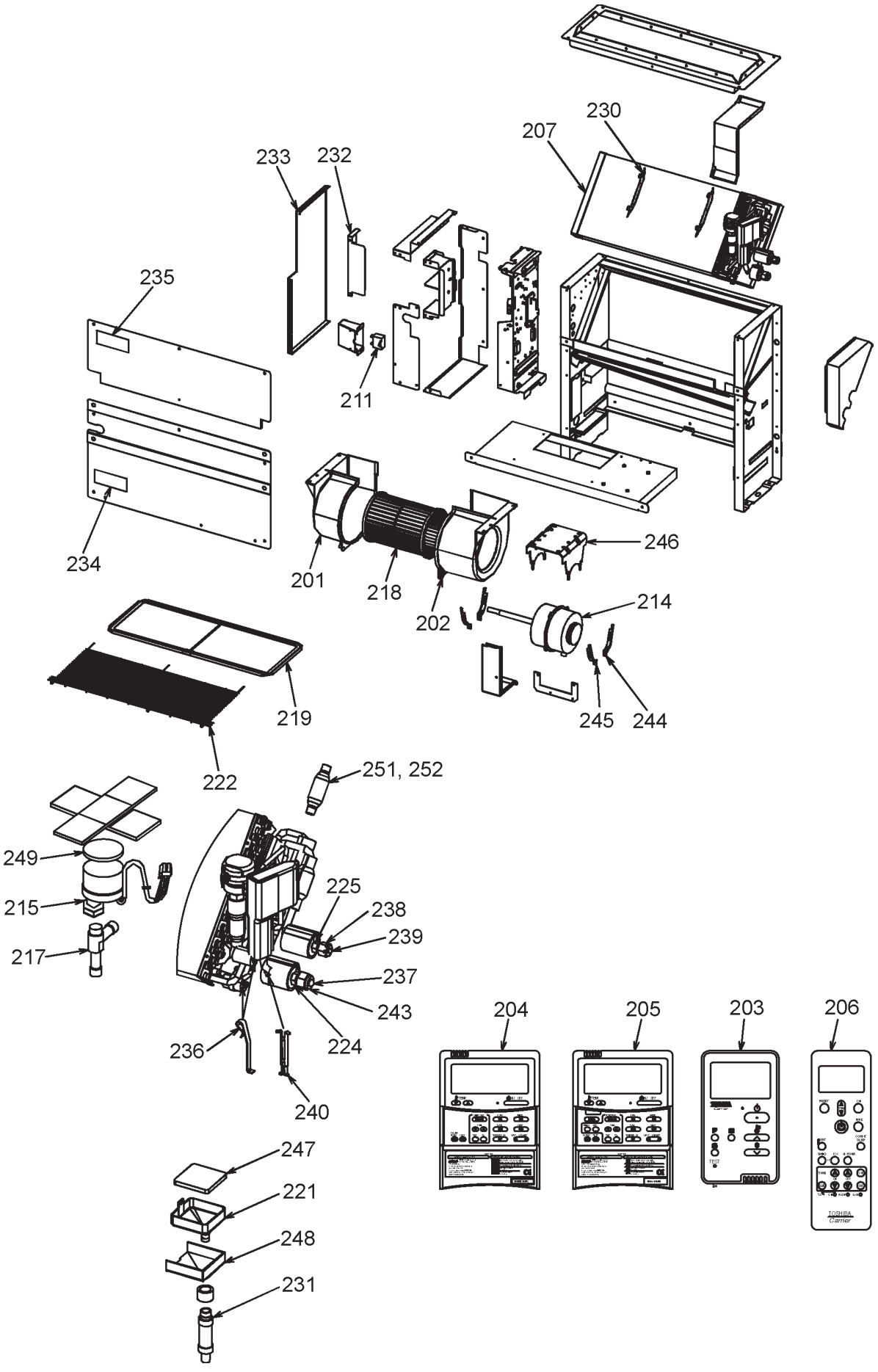
Location No.	Part No.	Description	Q'ty/Set MML-AP					
			0074 H2UL	0094 H2UL	0124 H2UL	0154 H2UL	0184 H2UL	0244 H2UL
201	43723020	CASE, FAN, LEFT	2	2	2	2	2	2
202	43723019	CASE, FAN, RIGHT	2	2	2	2		
203	43126119	CASE, FAN, RIGHT					2	2
204	43109394	GRILL,INLET,WHITE	2	2	2	2	2	2
205	43166026	REMOTE CONTROLLER, SIMPLE, SX-U01EQ	1	1	1	1	1	1
206	43166013	REMOTE CONTROLLER, SX-TA01UE	1	1	1	1	1	1
207	43166014	REMOTE CONTROLLER, SX-TB01UE	1	1	1	1	1	1
208	43166029	REMOTE CONTROLLER	1	1	1	1	1	1
209	43155175	CAPACITOR, 2.5MFD,400V					1	1
210	43155179	CAPACITOR, 1.5MFD,450V	1	1				
211	43155171	CAPACITOR, 2.0MFD, 450 V			1	1		
212	4312C150	MOTOR, FAN, AF-200-45-4FU			1	1		
213	4312C151	MOTOR, FAN, AF-200-70-4KU					1	1
214	4312C152	MOTOR, FAN, SWA-200U19A4A	1	1				
215	43146707	MOTOR, PMV, EDM-MD12TF-3	1	1	1	1	1	1
216	43146726	BODY, PMV, EFM-40YGTF			1	1	1	1
217	43146713	VALVE, PMV, EDM-B25YGTF-3	1	1				
218	43120228	FAN, MULTI BLADE	2	2	2	2		
219	43120232	FAN, MULTI BLADE					2	2
220	43180280	AIR FILTER	2	2	2	2	2	2
221	43101347	COVER, CONTROL PANEL, WHITE	1	1	1	1	1	1
222	43119531	GUARD, FAN	1	1	1	1	1	1
223	4314J536	REFRIGERATION CYCLE ASSY	1	1				
224	4314J537	REFRIGERATION CYCLE ASSY			1			
225	4314J538	REFRIGERATION CYCLE ASSY				1		
226	4314J539	REFRIGERATION CYCLE ASSY					1	
227	4314J540	REFRIGERATION CYCLE ASSY						1
228	43049776	SOCKET, 3/8, IN	1	1	1			1
229	43149351	SOCKET, 1/4, IN	1	1	1	1	1	
230	43047688	NUT, FLARE, 1/2, IN				1	1	
231	43149352	NUT, FLARE, 5/8, IN						1
232	43149353	SOCKET, 1/2, IN				1	1	
233	43149354	SOCKET, 5/8, IN						1
234	43109395	GRILLE, WHITE	3	3	3	3	3	3
235	43109240	GRILLE	1	1	1	1	1	1
236	43170201	HOSE, DRAIN	1	1	1	1	1	1
237	43104220	COVER WIRE	1	1	1	1	1	1
238	431S8137	LABEL, CAUTION	1	1	1	1	1	1
239	431S8299	LABEL, WARNING	1	1	1	1	1	1
240	43F19904	HOLDER, SENSOR (TS)	2	2	2	2	2	2
241	43F47609	BONNET, 3/8, IN	1	1	1	1		
242	43F47685	NUT, FLARE, 1/4 IN	1	1	1	1	1	1
243	43F49697	BONNET, 1/4 IN	1	1	1	1		
244	4310A128	PANEL, FRONT	1	1	1	1	1	1
245	4310A130	OUTLET	1	1	1	1	1	1
246	43107215	HOLDER, SENSOR	1	1	1	1	1	1
247	43147195	BONNET, 1/2 IN				1	1	
248	43194029	BONNET, 5/8 IN						1
249	43149355	NUT, FLARE, 3/8 IN	1	1	1			1
250	43147649	STRAINER	1	1	1			
251	43196087	BUSHING, GRILLE	6	6	6	6	6	6
252	43139154	BAND, MOTOR, LEFT	2	2	2	2	2	2
253	43139155	BAND, MOTOR, RIGHT	2	2	2	2	2	2
254	43122104	BASE, MOTOR	1	1	1	1	1	1
255	43101359	FRAME	1	1	1	1	1	1
256	43172256	PAN ASSY, DRAIN	1	1	1	1	1	1
257	4310A129	CABINET, UPPER	1	1	1	1	1	1
258	43149314	SHEET, PMV	1	1	1	1	1	1
259	43104219	PLATE ASSY	1	1	1	1	1	1
260	43147664	STRAINER	1	1	1	1	1	1

Electrical parts



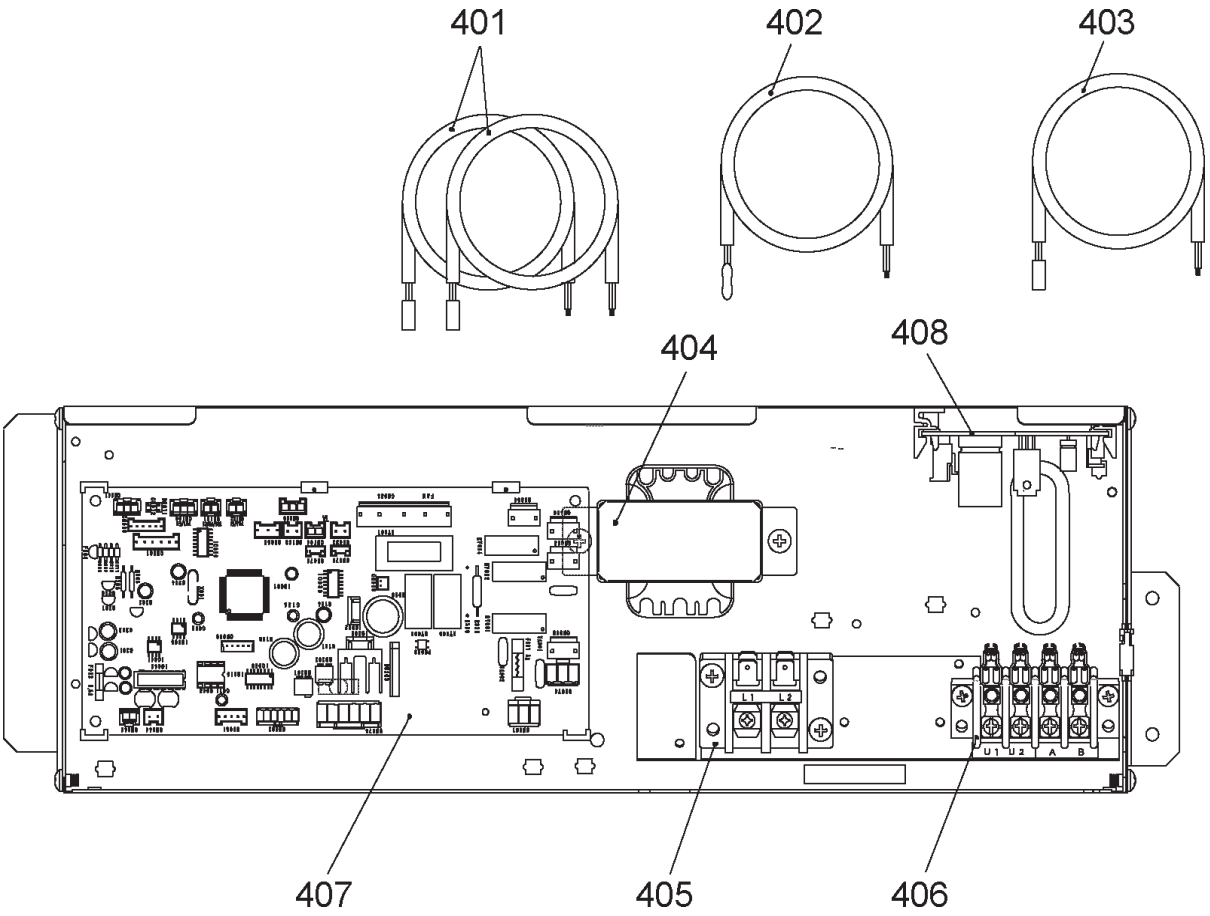
Location No.	Part No.	Description	Q'ty/Set MML-AP					
			0074 H2UL	0094 H2UL	0124 H2UL	0154 H2UL	0184 H2UL	0244 H2UL
401	43050425	SENSOR ASSY, SERVICE, TC (F6) : TC2, TCJ	2	2	2	2	2	2
402	43F50426	SENSOR, SERVICE, TA	1	1	1	1	1	1
403	43150320	SENSOR ASSY, SERVICE, TG (F4) : TC1	1	1	1	1	1	1
404	43158182	TRANSFORMER, TT-12	1	1	1	1	1	1
405	43160575	TERMINAL BLOCK, 2P, 20A	1	1	1	1	1	1
406	43160582	TERMINAL, 4P	1	1	1	1	1	1
407	4316V587	P. C. BOARD ASSY, MCC-1403	1	1	1	1	1	1
408	4316V345	P. C. BOARD ASSEMBLY, MCC-1520	1	1	1	1	1	1

11-2. Floor Console Recessed Type
MML-AP0074BH2UL, AP0094BH2UL, AP0124BH2UL



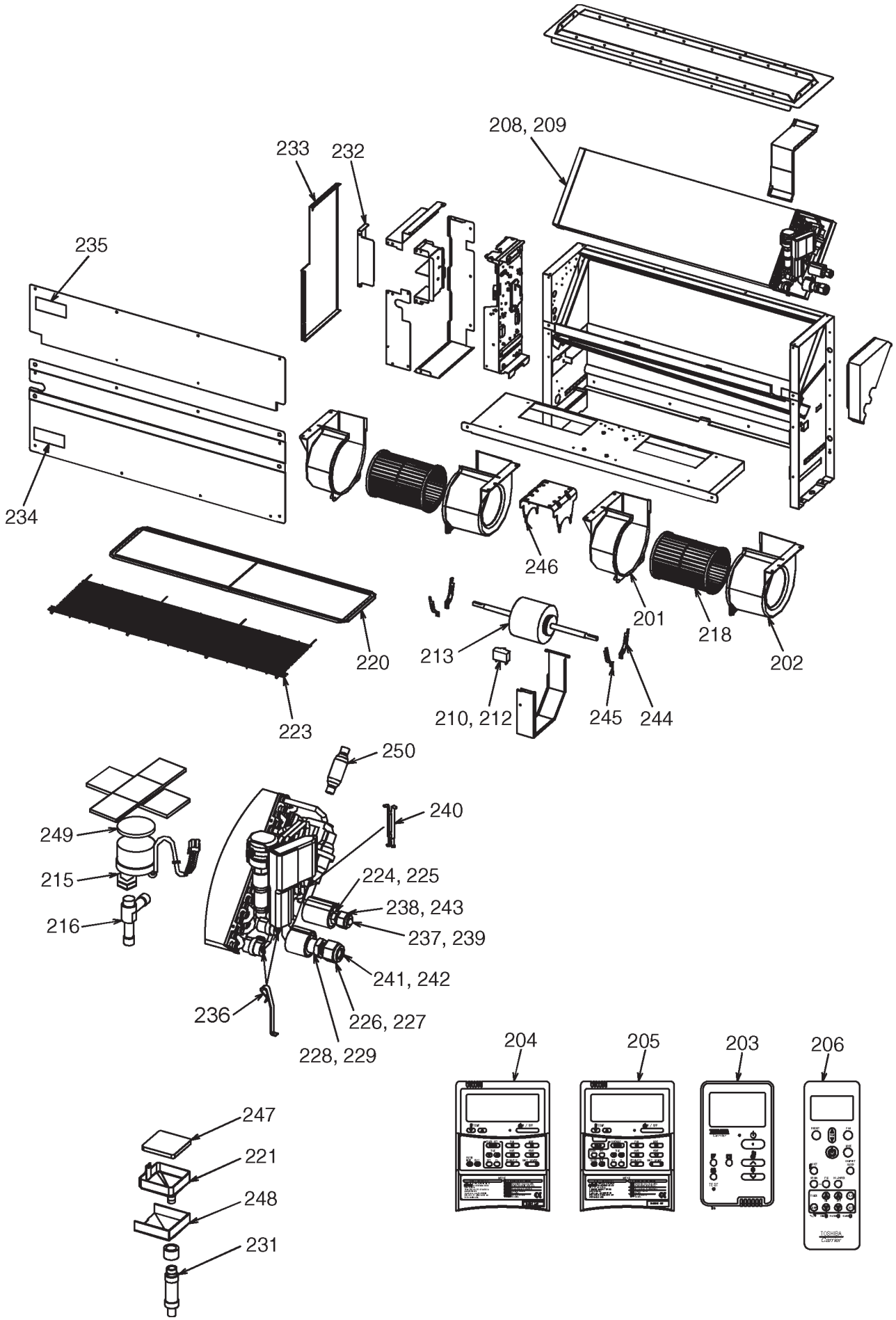
Location No.	Part No.	Description	Q'ty/Set MML-AP		
			AP0074 BH2UL	AP0094 BH2UL	AP0124 BH2UL
201	43723020	CASE, FAN, LEFT	1	1	1
202	43126119	CASE, FAN, RIGHT	1	1	1
203	43166026	REMOTE CONTROLLER, SIMPLE, SX-U01EQ	1	1	1
204	43166013	REMOTE CONTROLLER, SX-TA01UE	1	1	1
205	43166014	REMOTE CONTROLLER, SX-TB01UE	1	1	1
206	43166029	REMOTE CONTROLLER	1	1	1
207	4314J543	REFRIGERATION CYCLE ASSY	1	1	1
211	43155179	CAPACITOR, 1.5MFD,450V	1	1	1
214	4312C153	MOTOR, FAN, SWA-200U19A4B	1	1	1
215	43146707	MOTOR, PMV, EDM-MD12TF-3	1	1	1
217	43146713	VALVE, PMV, EDM-B25YGTF-3	1	1	1
218	43120232	FAN, MULTI BLADE	1	1	1
219	43180294	FILTER	1	1	1
221	43170206	CATCH, DRAIN	1	1	1
222	43119532	GUARD, WIRE	1	1	1
224	43049776	SOCKET, 3/8 IN	1	1	1
225	43149351	SOCKET, 1/4 IN	1	1	1
230	43122046	PLATE-WIND	2	2	2
231	43170197	HOSE ASSY	1	1	1
232	43119534	PLATE ASSY, CONDUIT	1	1	1
233	43119535	COVER ASSY	1	1	1
234	431S8137	LABEL, CAUTION	1	1	1
235	431S8299	LABEL, WARNING	1	1	1
236	43F19904	HOLDER, SENSOR (TS)	2	2	2
237	43F47609	BONNET	1	1	1
238	43F47685	NUT, FLARE, 1/4 IN	1	1	1
239	43F49697	BONNET	1	1	1
240	43107215	HOLDER, SENSOR	1	1	1
243	43149355	NUT, FLARE, 3/8 IN	1	1	1
244	43139154	BAND, MOTOR, LEFT	2	2	2
245	43139155	BAND, MOTOR, RIGHT	2	2	2
246	43122104	BASE, MOTOR	1	1	1
247	43170207	STRAINER	1	1	1
248	43111311	HINS	1	1	1
249	43149314	SHEET, PMV	1	1	1
251	43147724	STRAINER	1	1	1
252	4314Q043	STRAINER	1	1	1

Electrical parts



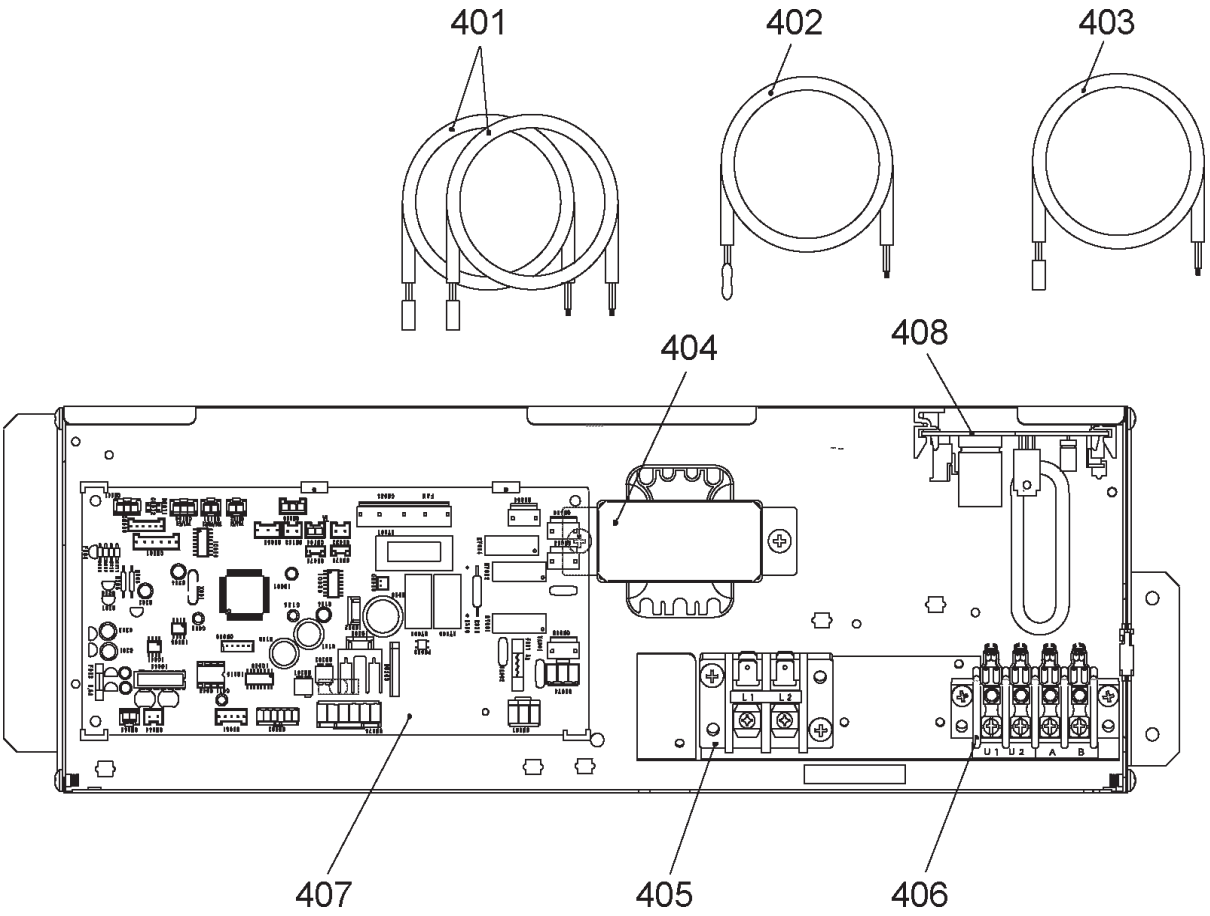
Location No.	Part No.	Description	Q'ty/Set MML-AP		
			AP0074 BH2UL	AP0094 BH2UL	AP0124 BH2UL
401	43050425	SENSOR ASSY, SERVICE ,TC (F6) : TC2, TCJ	2	2	2
402	43F50426	SENS0R, SERVICE, TA	1	1	1
403	43150320	SENSOR ASSY, SERVICE, TG (F4) : TC1	1	1	1
404	43158182	TRANSFORMER, TT-12	1	1	1
405	43160626	TERMINAL BLOCK, 2P, 20A	1	1	1
406	43160582	TERMINAL, 4P	1	1	1
407	4316V586	PC BOARD ASSY, MCC-1403	1	1	1
408	4316V345	P. C. BOARD ASSEMBLY, MCC-1520	1	1	1

MML-AP0154BH2UL, AP0184BH2UL, AP0244BH2UL



Location No.	Part No.	Description	Q'ty/Set MML-AP		
			AP0154 BH2UL	AP0184 BH2UL	AP0244 BH2UL
201	43723020	CASE, FAN, LEFT	2	2	2
202	43126119	CASE, FAN, RIGHT	2	2	2
203	43166026	REMOTE CONTROLLER, SIMPLE, SX-U01EQ	1	1	1
204	43166013	REMOTE CONTROLLER, SX-TA01UE	1	1	1
205	43166014	REMOTE CONTROLLER, SX-TB01UE	1	1	1
206	43166029	REMOTE CONTROLLER	1	1	1
208	4314J541	REFRIGERATION CYCLE ASSY	1	1	
209	4314J542	REFRIGERATION CYCLE ASSY			1
210	43155175	CAPACITOR, 2.5MFD,400V			1
212	43155191	CAPACITOR, 450V 1MF	1	1	
213	4312C151	MOTOR, FAN, AF-200-70-4KU	1	1	1
215	43146707	MOTOR, PMV, EDM-MD12TF-3	1	1	1
216	43146726	BODY, PMV, EFM-40YGTF	1	1	1
218	43120232	FAN, MULTI BLADE	2	2	2
220	43180295	FILTER	1	1	1
221	43170206	CATCH, DRAIN	1	1	1
223	43119533	GUARD, WIRE	1	1	1
224	43049776	SOCKET, 3/8 IN			1
225	43149351	SOCKET, 1/4 IN	1	1	
226	43047688	NUT, FLARE, 1/2 IN	1	1	
227	43149352	NUT, FLARE, 5/8 IN			1
228	43149353	SOCKET, 1/2 IN	1	1	
229	43149354	SOCKET, 5/8 IN			1
231	43170197	HOSE ASSY	1	1	1
232	43119534	PLATE ASSY, CONDUIT	1	1	1
233	43119535	COVER ASSY	1	1	1
234	431S8137	LABEL, CAUTION	1	1	1
235	431S8299	LABEL, WARNING	1	1	1
236	43F19904	HOLDER, SENSOR (TS)	2	2	2
237	43F47609	BONNET, 3/8 IN	1	1	1
238	43F47685	NUT, FLARE, 1/4 IN	1	1	1
239	43F49697	BONNET	1	1	1
240	43107215	HOLDER, SENSOR	1	1	1
241	43147195	BONNET, 1/2 IN	1	1	
242	43194029	BONNET, 5/8 IN			1
243	43149355	NUT, FLARE, 3/8, IN			1
244	43139154	BAND, MOTOR, LEFT	2	2	2
245	43139155	BAND, MOTOR, RIGHT	2	2	2
246	43122104	BASE, MOTOR	1	1	1
247	43170207	STRAINER	1	1	1
248	43111311	HINS	1	1	1
249	43149314	SHEET, PMV	1	1	1
250	43147664	STRAINER	1	1	1

Electrical parts



Location No.	Part No.	Description	Q'ty/Set MML-AP		
			AP0154 BH2UL	AP0184 BH2UL	AP0244 BH2UL
401	43050425	SENSOR ASSY, SERVICE ,TC (F6) : TC2, TCJ	2	2	2
402	43F50426	SENS0R, SERVICE, TA	1	1	1
403	43150320	SENSOR ASSY, SERVICE, TG (F4) : TC1	1	1	1
404	43158182	TRANSFORMER, TT-12	1	1	1
405	43160626	TERMINAL BLOCK, 2P, 20A	1	1	1
406	43160582	TERMINAL, 4P	1	1	1
407	4316V586	PC BOARD ASSY, MCC-1403	1	1	1
408	4316V345	P. C. BOARD ASSEMBLY, MCC-1520	1	1	1

WARNINGS ON REFRIGERANT LEAKAGE

Important

Check of Concentration Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its concentration will not exceed a set limit.

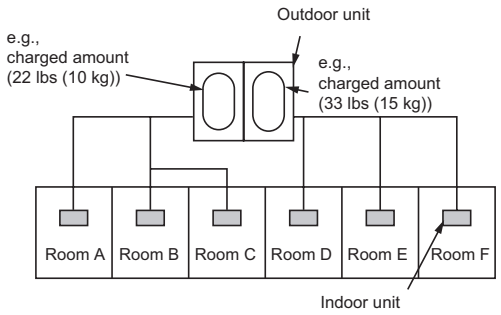
The refrigerant R410A which is used in the air conditioner is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws to be imposed which protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its concentration should rise excessively. Suffocation from leakage of R410A is almost non-existent. With the recent increase in the number of high concentration buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power etc.
Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared with conventional individual air conditioners. If a single unit of the multi conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its concentration does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).
In a room where the concentration may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.
The concentration is as given below.

$$\frac{\text{Total amount of refrigerant (lbs (kg))}}{\text{Min. volume of the indoor unit installed room (ft}^3\text{ (m}^3\text{))}} \leq \text{Concentration limit (lbs/ft}^3\text{ (kg/m}^3\text{))}$$

The concentration limit of R410A which is used in multi air conditioners is 0.019 lbs/ft³ (0.3kg/m³).

NOTE 1 :

If there are 2 or more refrigerating systems in a single refrigerating device, the amounts of refrigerant should be as charged in each independent device.



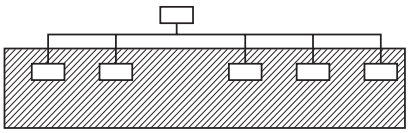
For the amount of charge in this example:

The possible amount of leaked refrigerant gas in rooms A, B and C is 22 lbs (10kg).
The possible amount of leaked refrigerant gas in rooms D, E and F is 33 lbs (15kg).

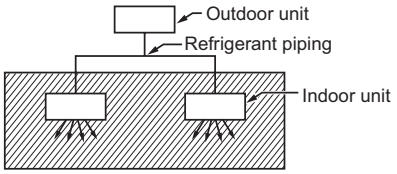
NOTE 2 :

The standards for minimum room volume are as follows.

1) No partition (shaded portion)

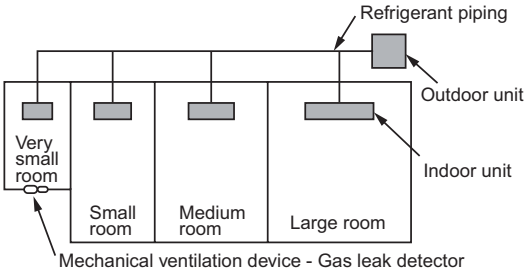


2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



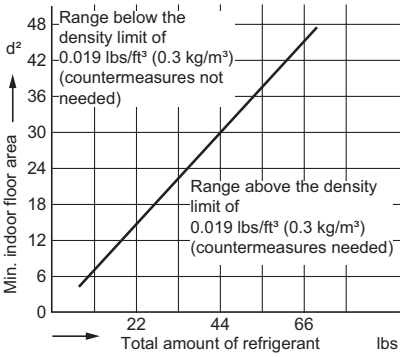
3) If an indoor unit is installed in each partitioned room and the refrigerant piping is interconnected, the smallest room of course becomes the object.

But when a mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



NOTE 3 :

The minimum indoor floor area compared with the amount of refrigerant is roughly as follows:
(When the ceiling is 8.9 ft (2.7m) high)



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Revision record

First issue	—	—	Mar., 2016
Revision 1	English was corrected.	Page 3, 4, 5, 6, 10, 11, 12, 13, 14, 15, 19, 20, 21, 22, 23, 24, 32, 36, 37, 38, 40, 42, 43, 46, 47, 48, 50, 58, 69, 70, 71, 72	Jun., 2016
Revision 2	The contents change of Description of service parts	Page 89, 92, 95	Jun., 2017