

Service Manual

PACKAGED AIR CONDITIONER
SYSTEM MULTI TYPE FOR BUILDING
UMXR Series
NEW Refrigerant Multi R407C

■ OUTDOOR UNIT

CU-P224MX1XP CU-P280MX1XP

■ INDOOR UNIT

ONE WAY CASSETTE TYPE

CS-P28DM1HP

FOUR WAY CASSETTE TYPE

CS-P36UM1HP

CS-P45UM1HP

CS-P56UM1HP

CS-P71UM1HP

CS-P80UM1HP

CS-P112UM1HP

CS-P140UM1HP

HIDE AWAY TYPE

CS-P45EM1HP

CS-P56EM1HP

CS-P71EM1HP

CS-P80EM1HP

CS-P112EM1HP

CS-P140EM1HP

WALL TYPE

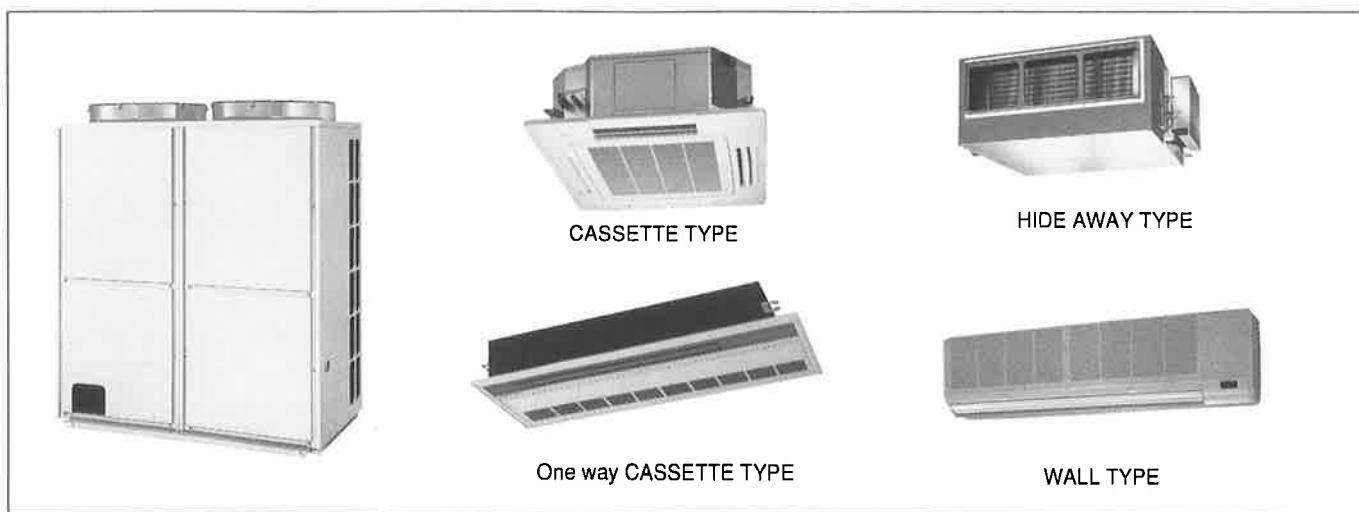
CS-P22KM1HP

CS-P36KM1HP

CS-P45KM1HP

CS-P56KM1HP

CS-P71KM1HP



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1 FEATURES

New refrigerant R407C does not damage the ozone layer

- Protection of the global environment is a theme of utmost significance to us today. Because the R22 refrigerant contains hydrogen and chlorine, when released into the air it gradually destroys the ozone layer and increases the incidence of ultraviolet radiation.
- The new refrigerant R407C contains no chlorine, and it reacts with hydrogen radicals in air, causing it to decompose in the troposphere without causing damage to the ozone layer.

New refrigerant (R407C) = HFC (Hydrofluorocarbon)
= Hydrogen + Fluorine + Carbon

Refrigerant (R22) = HCFC (Hydrochlorofluorocarbon)
= Hydrogen + Chlorine + Fluorine + Carbon

■ Outdoor units using new refrigerant



Package air conditioners helping to solve a global problem

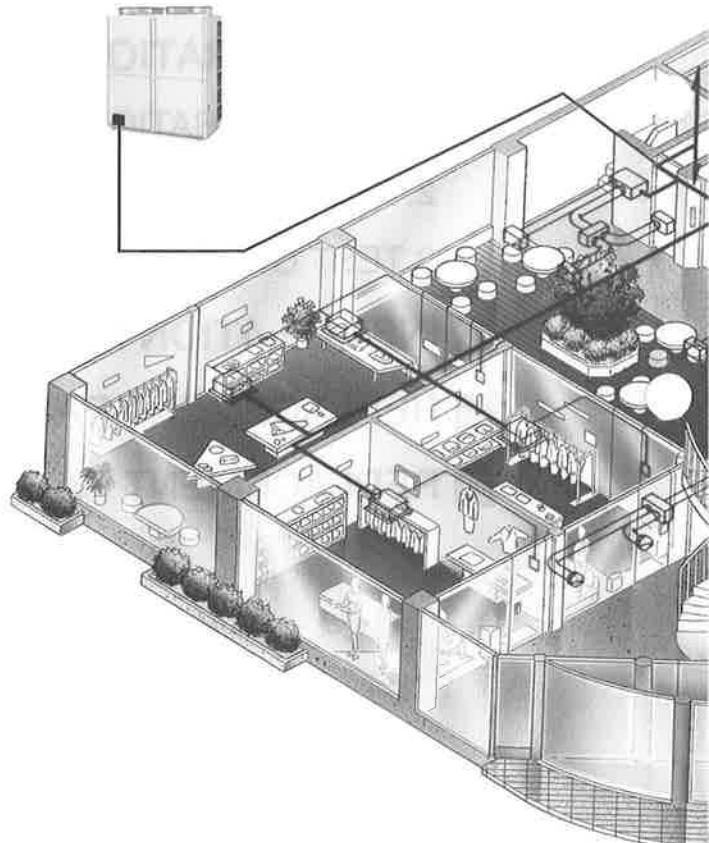
R407C details

- R = Refrigerant
- 4 = Non-azeotropic refrigerant mixture (Composition varies in liquid and gaseous states)
- 07 = Refrigerant mixture compounds
Difluoromethane (HFC32)
Pentafluoroethane (HFC125)
Tetrafluoroethane (HFC134a)
- C = Registration order for identical compounds with different ratios (A -)
HFC32 / Percentage by weight (wt%) 23%
HFC125 / Percentage by weight (wt%) 25%
HFC134a / Percentage by weight (wt%) 52%

NOTE: The new refrigerant is a mixture rather than a single compound and the boiling points of each compound are different. Therefore, the compounds must be mixed uniformly and the refrigerant must be charged in liquid form in order to maintain cooling and heating capacity.

■ Comparison of R407C characteristics

Refrigerant type	R407C	R22	Remarks
Molecular weight	86.19	86.47	
Boiling point (°C)	-43.6	-40.8	
Dew point temperature (°C)	-36.7	-40.8	
Vapor pressure (MPa)	1.09	0.94	At 25°C
Saturated vapor pressure (kg/m³)	42.5	44.4	At 25°C
Flammability	Non-flammable	Non-flammable	
Ozone Destruction Coefficient (ODP)	0	0.055	R12=1.0
Global Warming Coefficient (GWP)	1530	1700	R12=8500



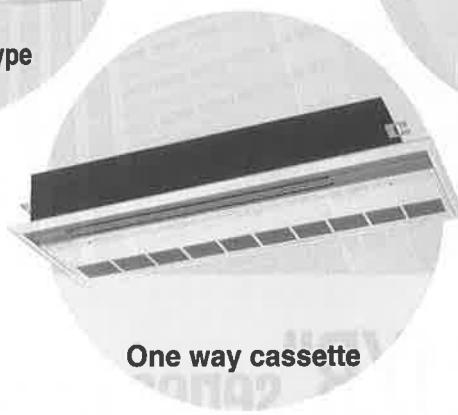
■ Indoor units using new refrigerant



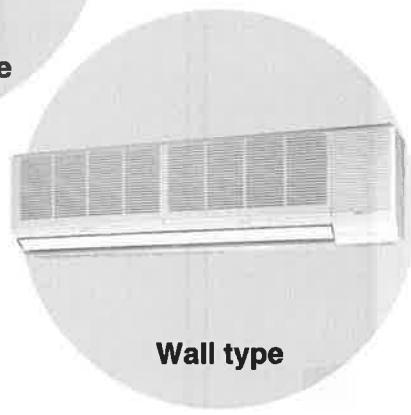
4 way Cassette type
(New type)



Hide-Away type



One way cassette



Wall type

Successfully achieves the same efficiency as the previous Building System Multi

- The new refrigerant R407C has nearly the same refrigerant characteristics as the R22 refrigerant, but there is a slight drop in performance and efficiency. Panasonic has developed the following technology to solve these problems.

1. High-efficiency scroll-type compressor

Adoption of a new scroll-type compressor with greater efficiency and reliability which can be used with the new refrigerant R407C.

2. High-performance heat exchanger

Improved arrangement of heat exchanger transmission tubes and improved fin specifications.

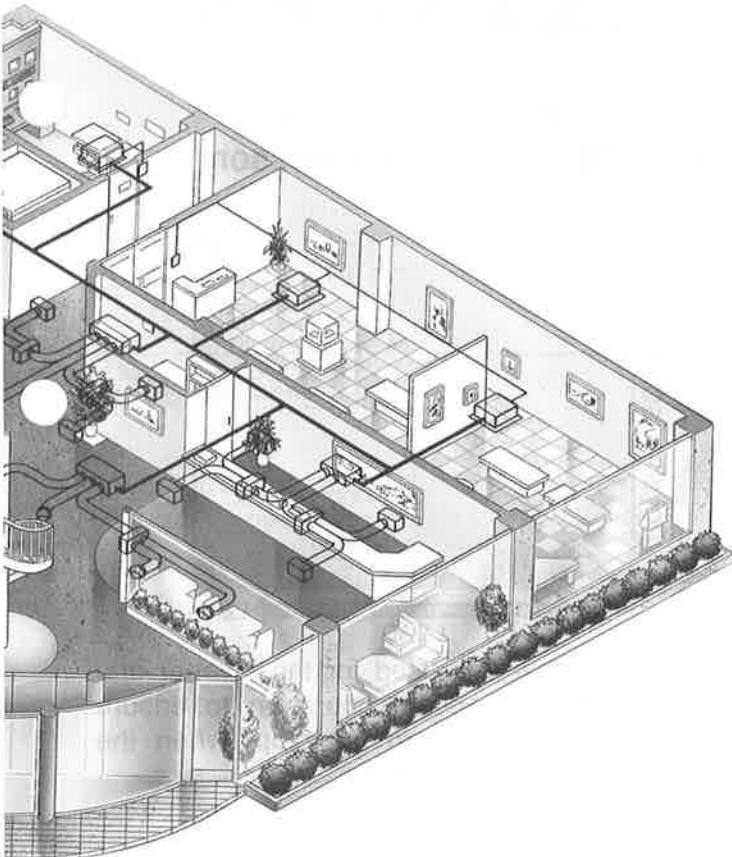
3. Optimized expansion valve control

Adoption of expansion valve control which detects overheating and overcooling of the new refrigerant (R407C) with high precision to make our renowned adaptive control (refrigerant flow adjustment based on load) even more efficient.

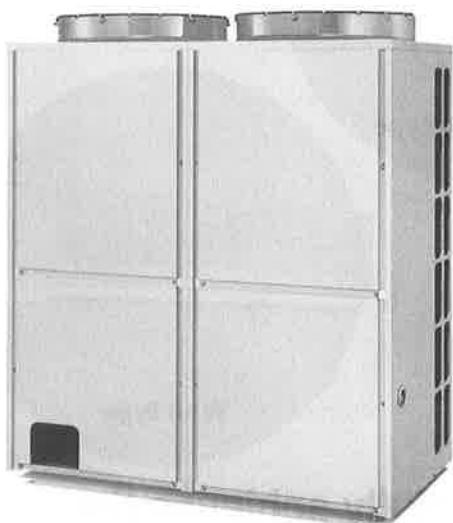
4. New compressor control system

A new pressure control method follows a load fluctuations by using the compressor's allowable operating range to the maximum degree possible.

- Compatibility with indoor units using R22
- No interchangeability with indoor units.
- All accessories have identical specifications.
- Urban Network control specifications are identical.



UMXR series



"UMXR" series features

Saving on Energy

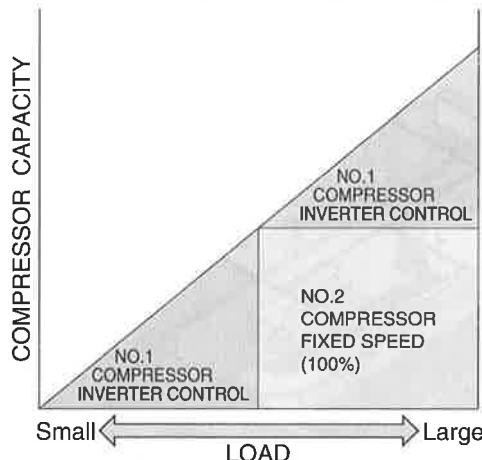
Linear control using dual compressors

- Two scroll compressors--inverter type and fixed speed type--are provided. As well as reduced noise and vibration, the inverter type (30-110 Hz) and fixed speed type (ON/OFF switching) compressors provide highly-efficient and fast cooling and heating.

Capacity Control

Linear control

30Hz~110Hz + No2 Compressor



Comfortability

High-level air conditioning with temperature variations of $\pm 0.5^{\circ}\text{C}$

- By using inverter control the temperature unevenness which results from using on/off control is eliminated, so that fine and comfortable air conditioning is provided.

Basic functions enhance comfort and safety

• Express startup control

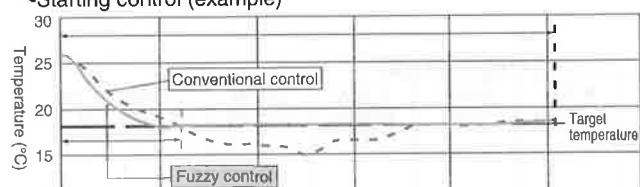
If, within 20 minutes after heating startup, (1) the outside air temperature is less than 0°C and (2) the microprocessor judges that the operating mode should be further boosted, the compressor is switched to express startup mode (for a maximum 3 minutes).

Fuzzy Control

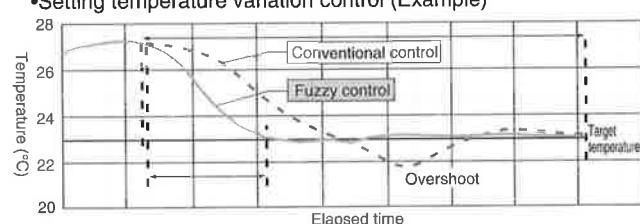
Fuzzy Control

With this control, data such as changes in room temperature and changes in compressor performance are regularly analyzed, and this data is used to control the necessary volume of refrigerant flow of the indoor units in each room, with the overall refrigerant flow volume in the entire system being determined at the outdoor units. This method ensures that control can be carried out at high speed, with a high level of comfort and with lower energy requirements.

•Starting control (example)



•Setting temperature variation control (Example)



(1)The pull down time for UMXR is half of conventional airconditioners.

(2)The time taken for refrigerant distribution when indoor temperature changes occur is speeded up, so that the time required to reach the setting temperature is further reduced by approximately 1/4.

(Both according to our conventional control)

■Performance data by model

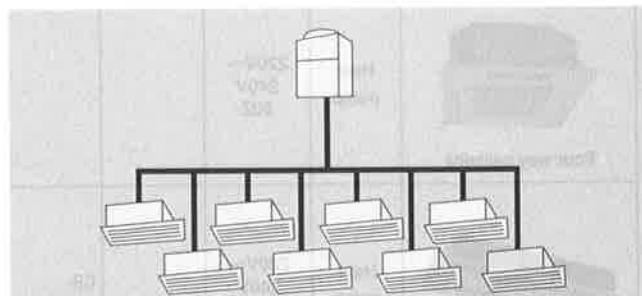
	Series		UMX	
	Model (equivalent HP)	CU-P224MX1XP (8HP)	CU-P280MX1XP (10HP)	
Environment	Noise level (50 Hz)	54	54	
Energy saving	Demand control	0-70-100		
Indoor/ outdoor unit connection	Indoor units connected	Max. no. of units Min. capacity (HP)	12	12
	Indoor/outdoor unit capacity ratio	CS-22 type (0.8 HP) or greater	50~135%	
	Indoor/outdoor height difference	50m		
	Pipe length	Max. height difference between indoor units	18m	
		Equivalent length	135m*	
		Total pipe length	250m	
		Actual length	110m	
Maintenance	Piping method	(1)Line piping (2)Header piping (3)Combination piping		
Maintenance	Emergency operation	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
Yearly cooling	Possible down to outdoor air temp. of -5°C (-2°C if operating capacity is less than 25%)			

*If the equivalent pipe length is 90 m or more, the diameter of the main gas-side piping must be increased.

Easy Installation

Up to 12 units can be connected, even if they are of different types and horsepowers.

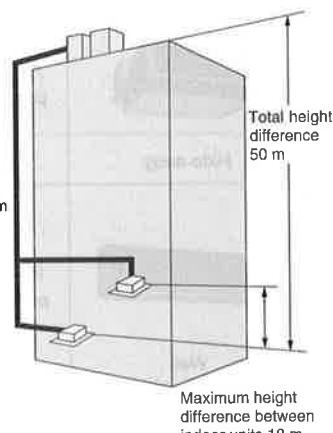
- Up to 12 indoor units with capacities in 5 different types from 0.8 to 5 HP totalling from 50% to 135% of the indoor unit capacity can be connected. This lets you select the indoor units according to the available space, application and interior decor.



Long pipe layout design for 135 m equivalent length

- Equivalent length of 135 m, total height difference of 50 m and maximum height difference between indoor units of 18 m.

Installation is possible in a structure equivalent to a 12-story building. The indoor units for a single system can also be distributed within a range of 4 to 5 floors.



Total height difference 50 m
Maximum height difference between indoor units 18 m

2 GENERAL INFORMATION

1. MULTI SYSTEM AND MODEL COMPOSITION OUTDOOR UNITS

UMXR series (NEW Refrigerant MULTI)

Type		Power Source 3 phase 4 Line	Model name	CAPACITY RANGE			
				22.4kW 8HP	28.0kW 10HP		
8HP unit	Heat pump	380-415V 50Hz	CU-P224MX1XP	●			
10HP unit	Heat pump	380-415V 50Hz	CU-P280MX1XP	●			

INDOOR UNITS UMXR series

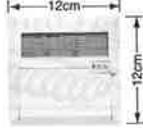
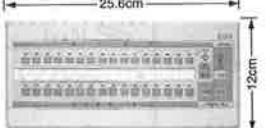
Type		Power source 1 φ	CAPACITY RANGE								
			2.2kW (0.8HP)	2.8kW (1.0HP)	3.6kW (1.25HP)	4.5kW (1.5HP)	5.6kW (2HP)	7.1kW (2.5HP)	8.0kW (3.0HP)	11.2kW (4.0HP)	14.0kW (5.0HP)
	Four way cassette	Heat pump	220V~240V 50Z		CS-P36UM1HP	CS-P45UM1HP	CS-P56UM1HP	CS-P71UM1HP	CS-P80UM1HP	CS-P112UM1HP	CS-P140UM1HP
	One way cassette	Heat pump	220V~240V 50Z		CS-P28DM1HP						
	Hide-away	Heat pump	220V~240V 50Z			CS-P45EM1HP	CS-P56EM1HP	CS-P71EM1HP	CS-P80EM1HP	CS-P112EM1HP	CS-P140EM1HP
	Wall	Heat pump	220V~240V 50Z	CS-P22KM1HP	CS-P36KM1HP	CS-P45KM1HP	CS-P56KM1HP	CS-P71KM1HP			

■ Accessory Parts

· Remote Controller (sold separately)

Indoor unit	4 way Cassette	1 way Cassette	Hide-Away	Wall
Heatpump	CZ-10RT33P	CZ-10RT33PA	CZ-10RT33PA	CZ-10RT33P
Model	 (CZ-10RT33P)			

· Central Controller

	Central Controller	Annunciator	Centralized control board
Model	 (Maximum 16 units)	 (Maximum 16 units)	 (Maximum 200 units)
(Maximum Control numbers)			
Heatpump	220~230V 50Hz 240V 50Hz	CZ-ESS51P	CZ-EAN51FP CZ-EAN51RP
			CZ-ESM51FP CZ-ESM51RP

HEADER BRANCH PIPING INSTALLATION MANUAL

CZ-04PHKV3 CZ-06PHKV3 CZ-08PHKV3

Accessories

	CZ-04PHKV3 (4 Branches)	CZ-06PHKV3 (6 Branches)	CZ-08PHKV3 (8 Branches)
Gas pipe			
Liquid pipe			
Different diameter sockels(Gas)			
Different diameter sockels(Liquid)			
Stopper	Large 1 Piece (Liquid) Small 2 Pieces (Gas)	Large 1 Piece (Liquid) Medium 2 Pieces (Liquid) Small 4 Pieces (Gas)	Large 1 Piece (Liquid) Medium 4 Pieces (Liquid) Small 8 Pieces (Gas)
Insulating of branch			
Stopper			
Tape	Large 1 Sheets Small 8 Sheets	Large 2 Sheets Small 12 Sheets	Large 8 Sheets Small 16 Sheets

LINE BRANCH PIPING INSTALLATION MANUAL

CZ-09PBKV3 CZ-19PBKV3 CZ-39PBKV3

Accessories

Part name	Gas branching pipe	Liquid branching pipe	Insulating material (Gas)	Insulating material (Liquid)	Tape
CZ-39PBKV3					
CZ-19PBKV3					
CZ-09PBKV3					

3 OUTDOOR UNIT

1.SPECIFICATIONS(OUTDOOR UNIT)

SPECIFICATIONS(OUTDOOR UNIT)

HEAT PUMP TYPE

ITEM	Model Name	Power Source	380~415V 50Hz,3φ	CU-P224MX1XP	CU-P280MX1XP
(1) Cooling Capacity		kW	22.4	28.0	
		kcal/h	19,300	24,100	
		BTU/h	77,000	96,000	
(2) Heating Capacity		kW	25.0	31.5	
		kcal/h	21,500	27,000	
		BTU/h	86,000	108,000	
Standard Air Volume		m ³ /min(L/s) cf/m.	150(2500) 5,296	150(2500) 5,296	
External Static Pressure		mmAq Pa		0 0	
Air inlet				Both sided Suction	
Air Outlet				Upper Blow-out	
Outside Dimension(H×W×D)		mm inch		1510×1300×(700+50) 59-29/64×51-3/16×(27-9/16+1-31/32)	
Noise Level		dB(A)	54	54	
Net Weight		kg lbs.	271 596	285 627	
Piping Connection	Refrigerant	Gas	mm(inch)	O.D φ 25.4(1)Brazing type	O.D φ 28.58(1-1/8)Brazing type
		Liquid	mm(inch)	O.D φ 12.7(1/2)Flared type	O.D φ 12.7(1/2)Flared type
		Drain	mm	Natural drainage; 9 drain holes φ 12	
Compressor	Type,number of set			Hermetic(Scroll)•2	
	Starting Method			Inverter starting, Direct on-line starting	
	Capacity Control	%		9.8~100	7.9~100
	Motor	Type		2-pole 3-phase induction motor	
		Input	kW	(Cool) 9.07 (Heat) 8.32	(Cool) 11.44 (Heat) 10.64
		Rated Output	kW	3.3+2.2	3.3+3.75
Fan	Type,number of set			Axial-flow fan-2	
	Air Volume Control			-	
	Motor	Type		8-pole single-phase induction motor	
		Input	kW	0.36	
		Rated Output	kW	0.11×2	
Air-heat exchanger				Louver-fin type	
Defrost Control				Microprocessor control(reverse cycle defrost)	
Refrigerant Control				Electronic expansion valve	
Refrigerant Oil(Charged)		L		Ze-GLES RB68AD(3.0)	Ze-GLES RB68AD(3.3)
Refrigerant(Charged)		kg lbs		R407C(11.0)	R407C(12.0)
				24.2	26.4
Safety Devices				Current Trans,Crankcase heater,Fusible plug High-pressure switch,Internal thermostat	
Finish				Galvanized steel plate finished with baked acrylic-resin	

(1) Cooling capacities are based on temp.27°CDB.(80.6°FDB.),19.0°CWB.(66.2°FWB.)and outdoor air temp.
35°CDB.(95°FDB.),24°CWB.(75.2°FWB.)

(2) Heating capacities are based on indoor temp.20°CDB.(68.0°FDB.)and outdoor sir temp.7°CDB.(44.6°FDB.)6°CWB.(42.8°FWB.)

(3) The figure of []column of the starting current shows the maximum running current.

(4) The amount of above-mentioned refrigerant does not contain the piping length.

(5) The indoor equipment which can be connected is 12 or less.

(6) Connected capacity of the indoor unit is 50%~135% of the outdoor unit.

ELECTRICAL DATA [OUTDOOR UNIT](50Hz)

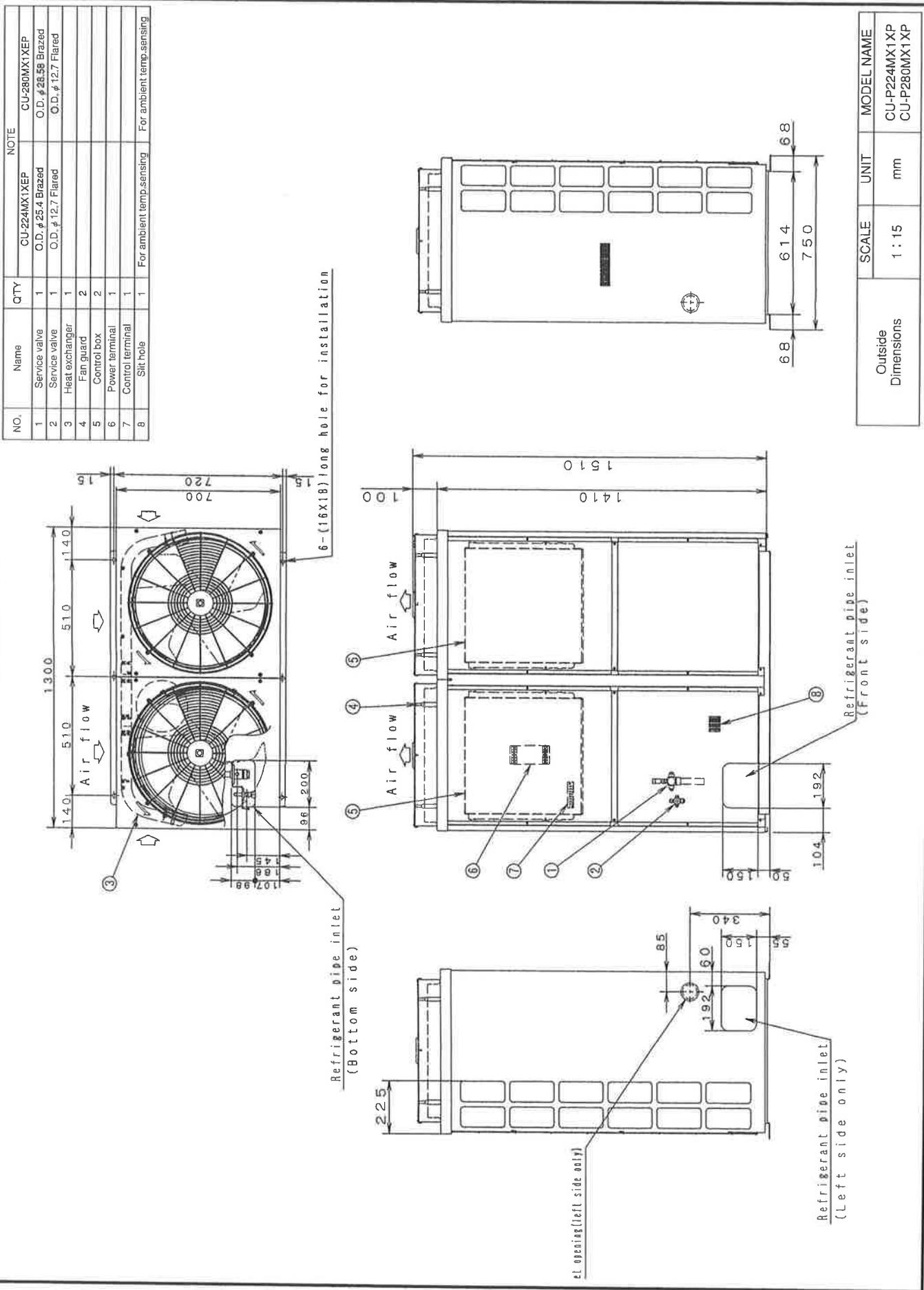
ITEM	MODEL		CU-P224MX1XP			CU-P280MX1XP		
Volts	V		380	400	415	380	400	415
Phase			3N	3N	3N	3N	3N	3N
Power Consumption	kW	Cool	9.43	9.43	9.43	11.8	11.8	11.8
		Heat	8.68	8.68	8.68	11.0	11.0	11.0
Running Current	A	Cool	15.7	15.1	14.8	19.4	18.8	18.4
		Heat	14.2	13.6	13.4	18.2	17.6	17.3
Maximum Running Current.	A	[20.4]	[19.6]	[19.2]	[25.3]	[24.2]	[23.8]	
Starting Current	A	40.7	42.4	43.5	52.5	57.8	58.9	
Power Factor	%	Cool	91.3	90.1	88.6	92.4	90.6	89.2
		Heat	92.9	92.1	90.1	91.8	90.2	88.5

3.OUTDOOR UNIT

2. OUTSIDE DIMENSIONS

① UMXR

Outdoor unit(CU-P224MX1XP, CU-P280MX1XP)

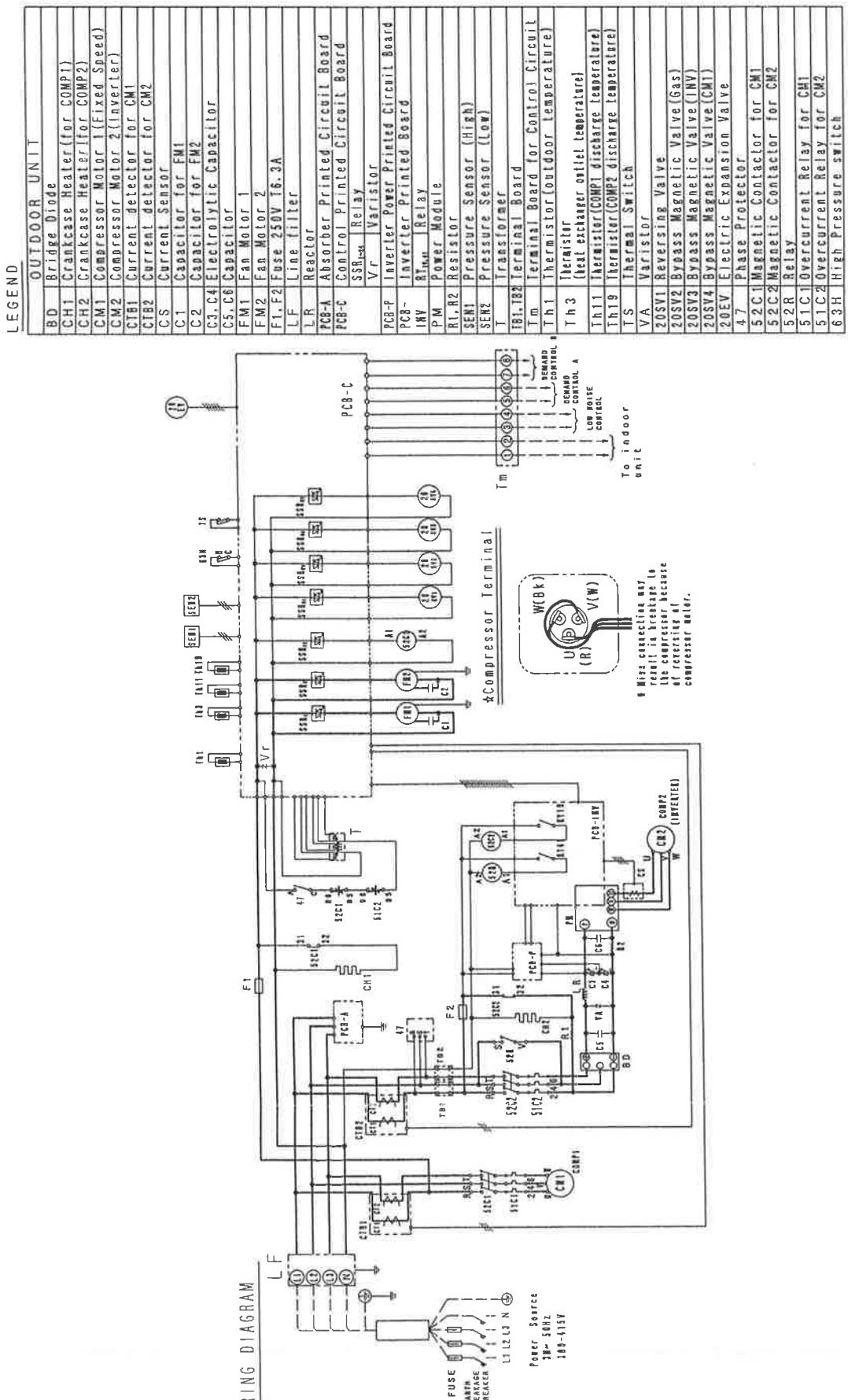


3.OUTDOOR UNIT

3.CIRCUIT DIAGRAM

①UMXR

CU-P224MX1XP, CU-P280MX1XP



Electric Circuit Diagram	OUTDOOR UNIT	MODEL NAME
		CU-P224MX1XP CU-P280MX1XP

■UMX R outdoor unit wiring connection

CU-P224MX1XP CU-P280MX1XP

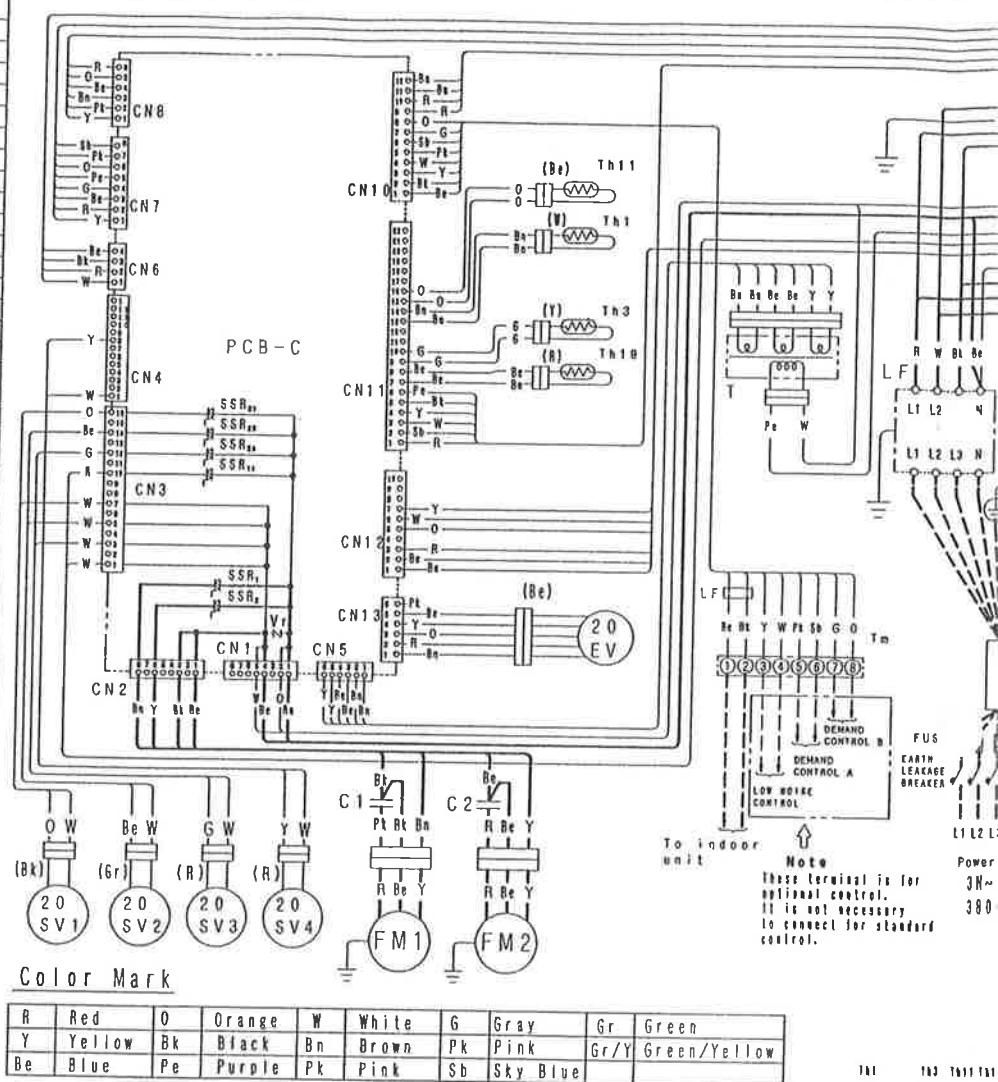
ELECTRIC CIRCUIT DIAGRAM

As for electric
refer the electric
to the indoor unit.

LEGEND

OUTDOOR UNIT	
BD	Bridge Diode
CH1	Crankcase Heater (for COMP1)
CH2	Crankcase Heater (for COMP2)
CM1	Compressor Motor 1 (Fixed Speed)
CM2	Compressor Motor 2 (Inverter)
CTB1	Current detector for CM1
CTB2	Current detector for CM2
CS	Current Sensor
C1	Capacitor for FM1
C2	Capacitor for FM2
C3, C4	Electrolytic Capacitor
C5, C6	Capacitor
FM1	Fan Motor 1
FM2	Fan Motor 2
F1, F2	Fuse 250V T6.3A
LF	Line filter
LR	Reactor
PCB-A	Absorber Printed Circuit Board
PCB-C	Control Printed Circuit Board
SSR ₁₋₄	Relay
Vr	Varistor
PCB-P	Inverter Power Printed Circuit Board
PCB-INV	Inverter Printed Board
RY ₁₋₄	Relay
PM	Power Module
R1, R2	Resistor
SEN1	Pressure Sensor (High)
SEN2	Pressure Sensor (Low)
T	Transformer
TB1, TB2	Terminal Board
Tm	Terminal Board for Control Circuit
Th1	Thermistor (outdoor temperature)
Th3	Thermistor (heat exchanger outlet temperature)
Th11	Thermistor (COMP1 discharge temperature)
Th19	Thermistor (COMP2 discharge temperature)
TS	Thermal Switch
VA	Varistor
20SV1	Reversing Valve
20SV2	Bypass Magnetic Valve (Gas)
20SV3	Bypass Magnetic Valve (Comp2) (NV)
20SV4	Bypass Magnetic Valve (Comp1)
20EV	Electric Expansion Valve
47	Phase Protector
5.2C1	Magnetic Contactor for CM1
5.2C2	Magnetic Contactor for CM2
5.2R	Relay
5.1C1	Overcurrent Relay for CM1
5.1C2	Overcurrent Relay for CM2
63H	High Pressure switch

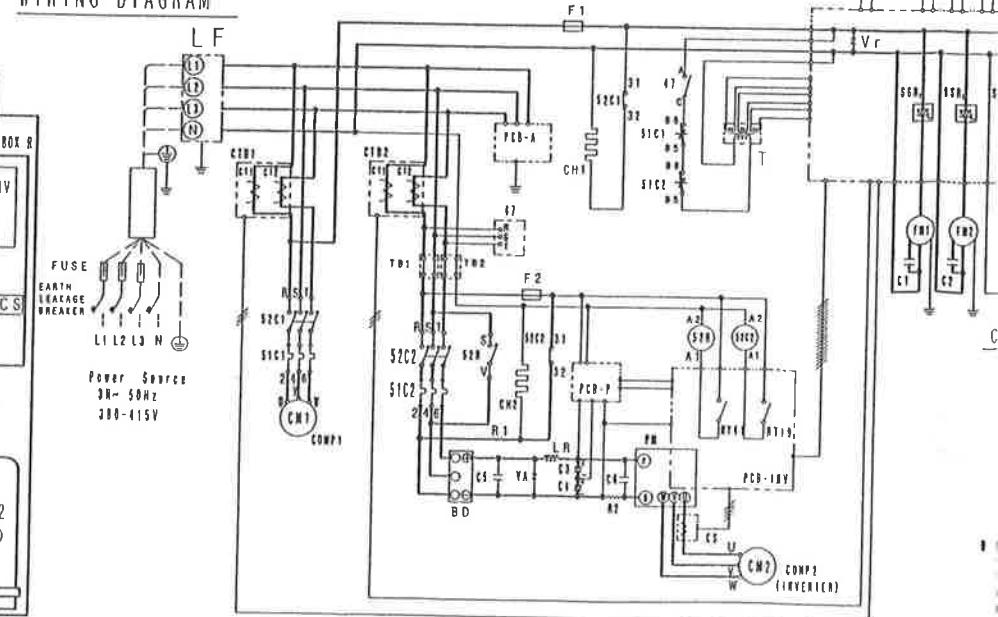
WIRING CONNECTION



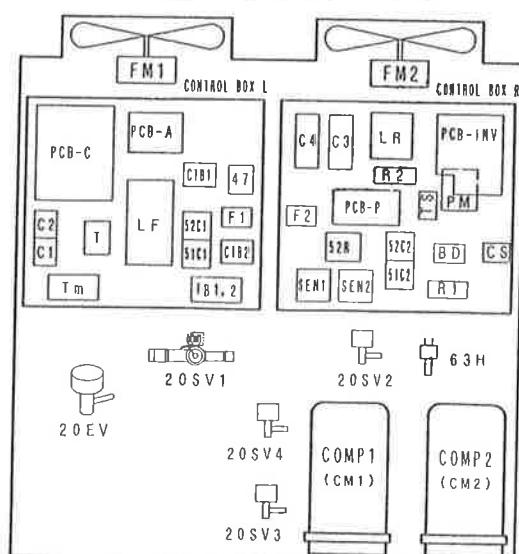
Color Mark

R	Red	O	Orange	W	White	G	Gray	Gr	Green
Y	Yellow	Bk	Black	Bn	Brown	Pk	Pink	Gr/Y	Green/Yellow
Be	Blue	Pe	Purple	Pk	Pink	Sb	Sky Blue		

WIRING DIAGRAM

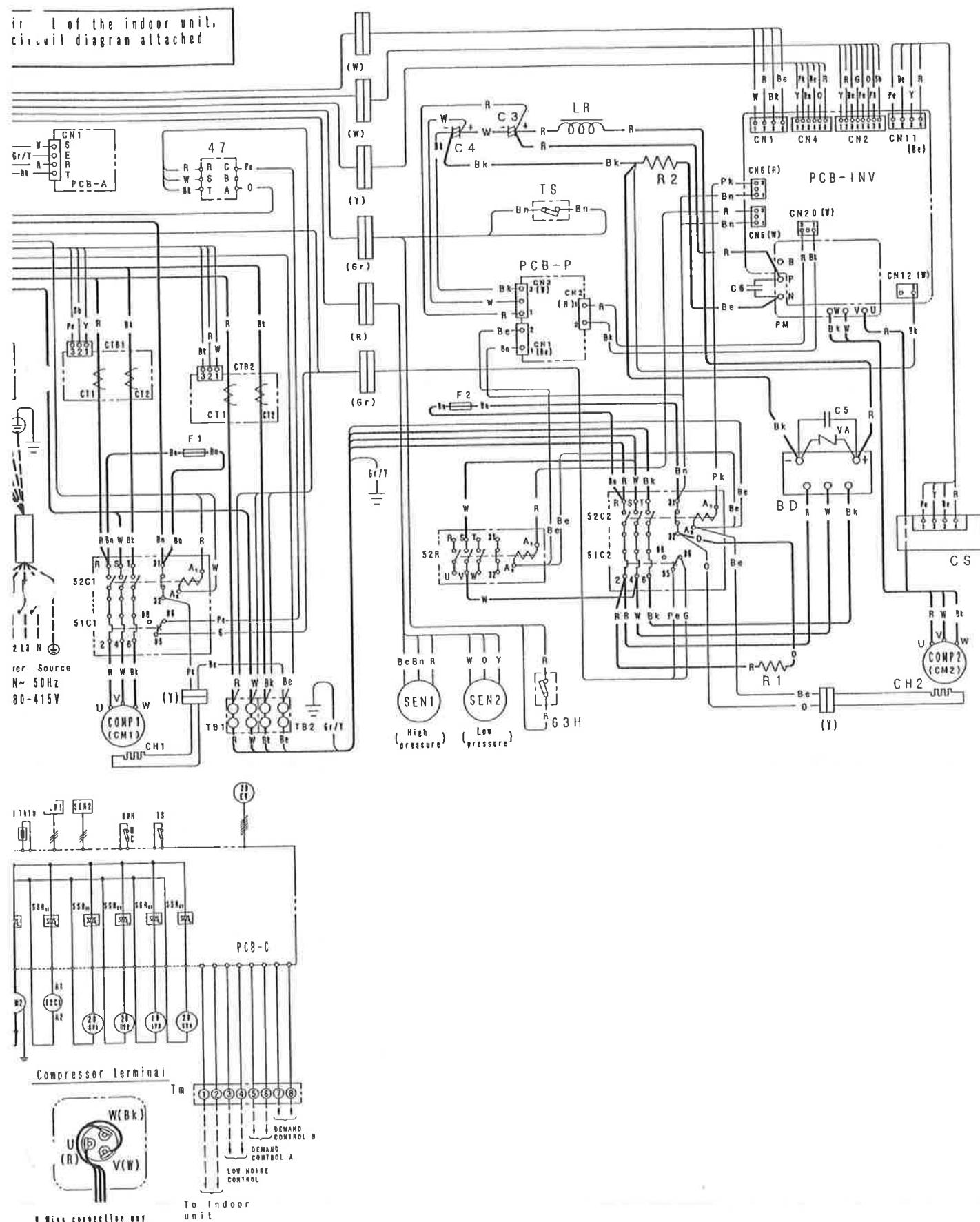


Main components position



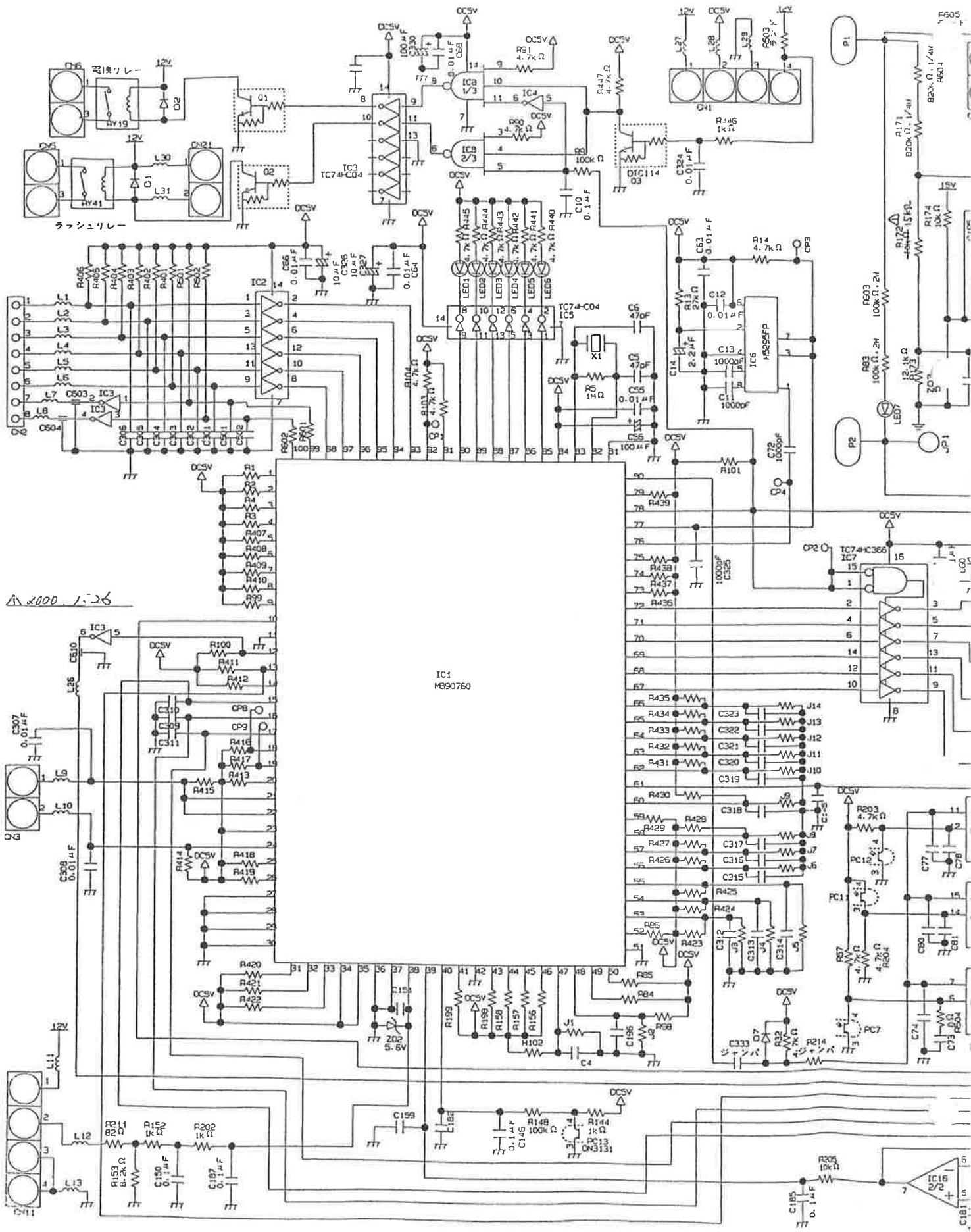
3.OUTDOOR UNIT

ir l of the indoor unit,
circuit diagram attached

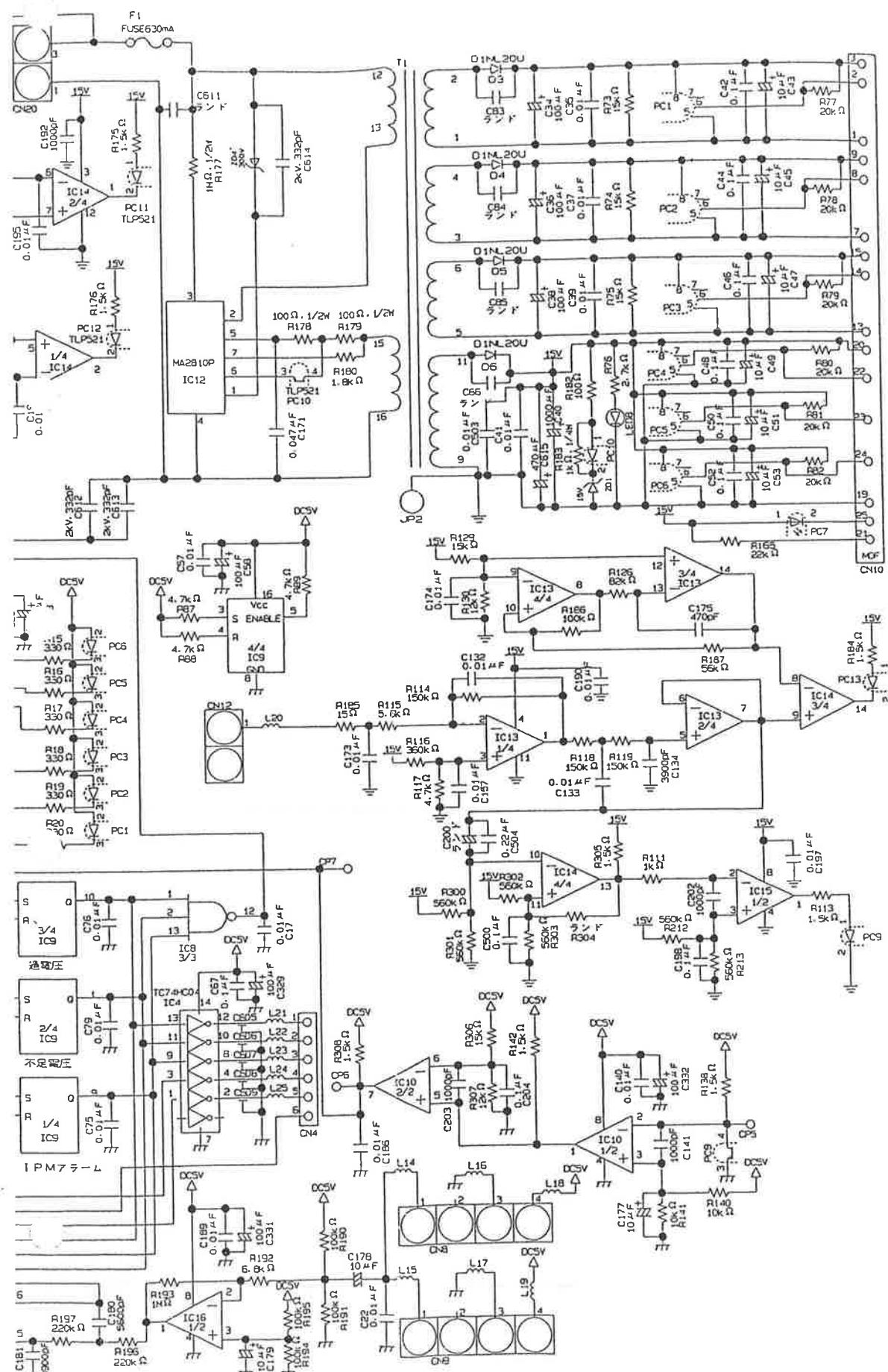


! Miss connection may
result in damage to
the compressor because
of reversing of
compressor motor.

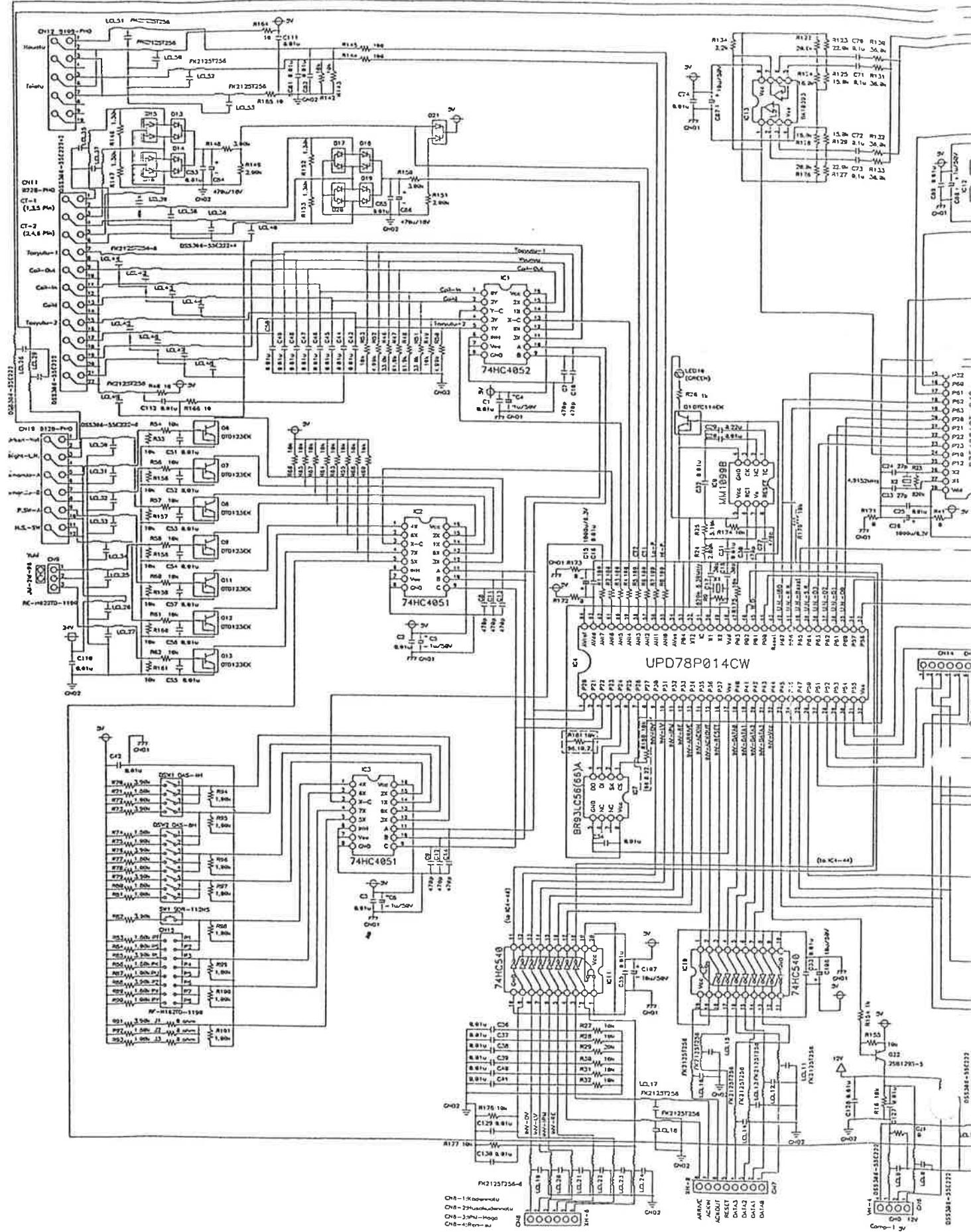
3.OUTDOOR UNIT



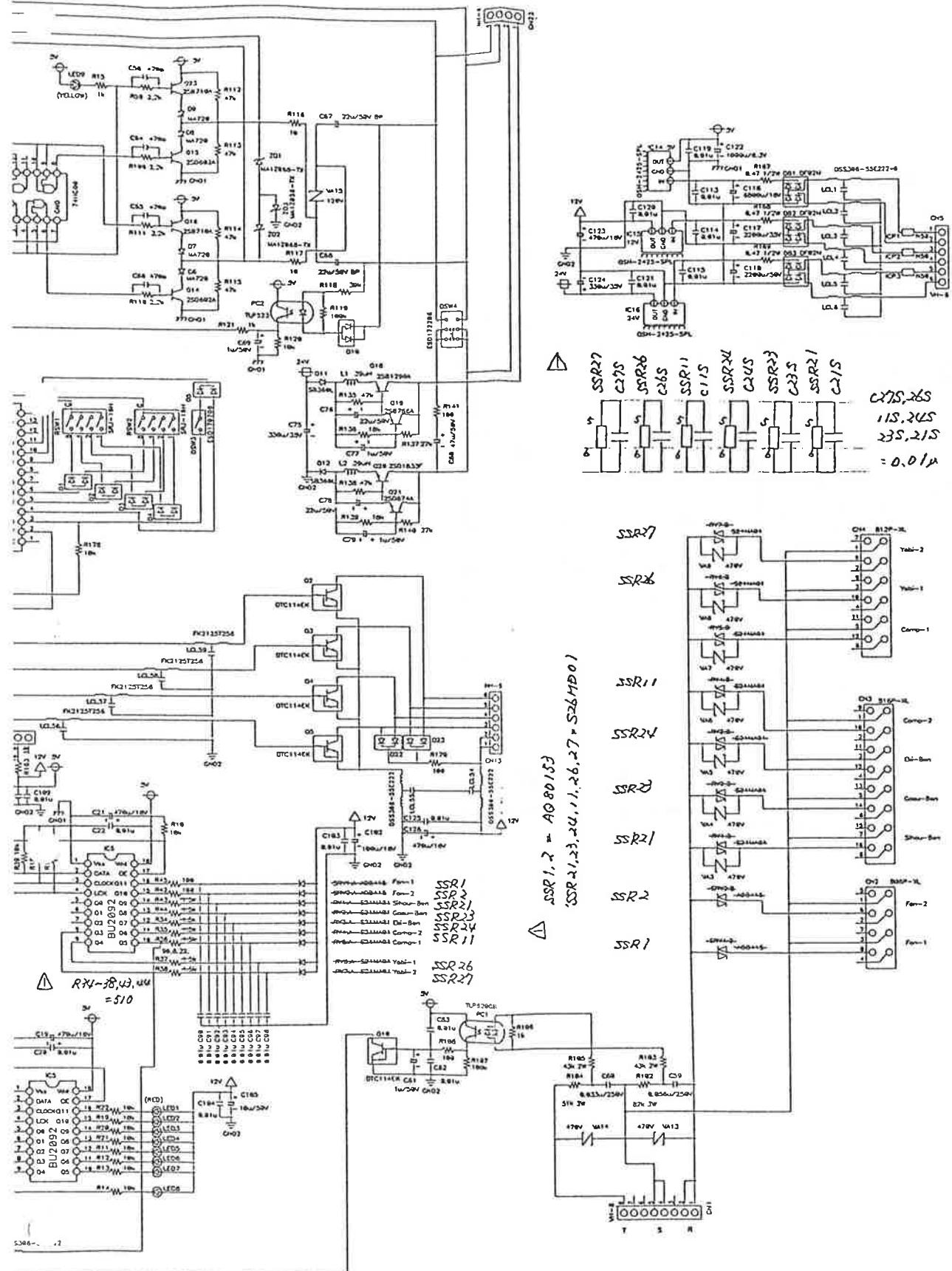
3. OUTDOOR UNIT



3.OUTDOOR UNIT

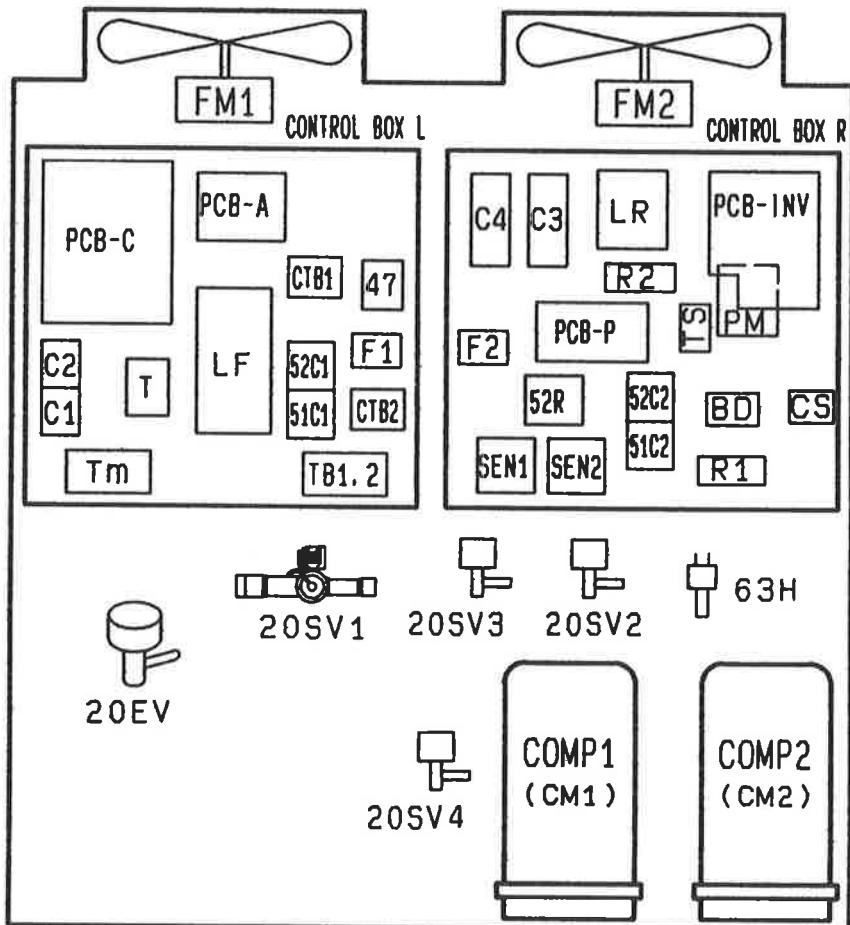


3. OUTDOOR UNIT



■UMXR Outdoor unit main component position

Main components position



LEGEND

OUTDOOR UNIT	
BD	Bridge Diode
CH1	Crankcase Heater(for COMP1)
CH2	Crankcase Heater(for COMP2)
CM1	Compressor Motor 1(Fixed Speed)
CM2	Compressor Motor 2(inverter)
CTB1	Current detector for CM1
CTB2	Current detector for CM2
CS	Current Sensor
C1	Capacitor for FM1
C2	Capacitor for FM2
C3, C4	Electrolytic Capacitor
C5, C6	Capacitor
FM1	Fan Motor 1
FM2	Fan Motor 2
F1, F2	Fuse 250V T6.3A
LF	Line filter
LR	Reactor
PCB-A	Absorber Printed Circuit Board
PCB-C	Control Printed Circuit Board
SSR- _H	Relay
V _r	Varistor
PCB-P	Inverter Power Printed Circuit Board
PCB-INV	Inverter Printed Board
IHV	RY _{H,H} Relay
PM	Power Module
R1, R2	Resistor
SEN1	Pressure Sensor (High)
SEN2	Pressure Sensor (Low)
T	Transformer
TB1, TB2	Terminal Board
Tm	Terminal Board for Control Circuit
Th1	Thermistor(outdoor temperature)
Th3	Thermistor (heat exchanger outlet temperature)
Th11	Thermistor(COMP1 discharge temperature)
Th19	Thermistor(COMP2 discharge temperature)
TS	Thermal Switch
VA	Varistor
20SV1	Reversing Valve
20SV2	Bypass Magnetic Valve(Gas)
20SV3	Bypass Magnetic Valve(Comp2INV)
20SV4	Bypass Magnetic Valve(Comp1)
20EV	Electric Expansion Valve
47	Phase Protector
52C1	Magnetic Contactor for CM1
52C2	Magnetic Contactor for CM2
52R	Relay
51C1	Overcurrent Relay for CM1
51C2	Overcurrent Relay for CM2
63H	High Pressure switch

3. OUTDOOR UNIT

4. OUTDOOR UNIT CONTROL PRINTED CIRCUIT BOARD

CU-P224MX1XP

CU-P280MX1XP

Current sensor abnormal	6
Reset information	5
Current release	4
IPM protect	3
Undervoltage	2
Oversupply	-

CN 8

Inverter communication	8
Inverter communication	7
Inverter communication	6
Inverter communication	5
Inverter communication	4
Inverter communication	3
Inverter communication	2
Inverter communication	-1

CN 7

Inverter ON signal	4
Inverter P.C.B GND	3
Inverter P.C.B 5 V	2
Inverter P.C.B 12 V	-1

CN 6

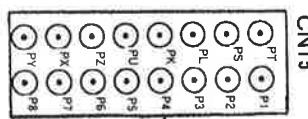
Fixed Speed Liquid bypass(L1)	12
Fixed Speed Liquid bypass(N)	8
Reversing valve (L1 phase)	-1
Gas bypass (L1 phase)	16
Liquid bypass (L1 phase)	15
Compressor IA 2 (L1 phase)	14
Reversing valve (N phase)	13
Gas bypass (N phase)	12
Liquid bypass (N phase)	11
Compressor IA 1 (N)	10

CN 4

CN 3

Fan 1 (L1phase)	8
Fan 2 (L1phase)	7
Fan 1 (Nphase)	6
Fan 2 (Nphase)	5
Fan 1 (Nphase)	4
Fan 2 (Nphase)	3
Fan 1 (Nphase)	2
Fan 2 (Nphase)	-1

CN 2



CN 15



CN 13

Demand/snow fall control change over	2
Demand/snow fall control change over	-1

CN 9

Heat sink thermal guard switch	12
Heat sink thermal guard switch	11
Pressure switch	10
Pressure switch	9
Demand B	8
Demand B	7
Demand A	6
Demand A	5
Nighttime low noise	4
Nighttime low noise	3
Communication between indoor and outdoor	2
Communication between indoor and outdoor	1

CN 10

22~17	16
5 V	15
Thermistor (Compressor 1 discharge)	14
5 V	13
Thermistor (Ambient temperature ture sensor)	12
5 V	11
Thermistor (Heat exchanger inlet pipe)	10
5 V	9
Thermistor (Heat exchanger outlet pipe)	8
5 V	7
Inverter compressor discharge temperature sensor	6
CTB1 (for compressor 1)	5
CTB2 (for inverter compressor)	4
CTB1 (for compressor 1)	3
CTB2 (for inverter compressor)	2
CTB1 (for compressor 1)	-1

CN 11

10	9
8	7
6	5
5	4
3	2
High pressure- sensor (GND)	1
High pressure sensor (5 V)	2
High pressure sensor (sensor)	-

CN 12

Transformer (for 24 V)	6
Transformer (for 24 V)	5
Transformer (for 12 V)	4
Transformer (for 12 V)	3
Transformer (for 5 V)	2
Transformer (for 5 V)	-1

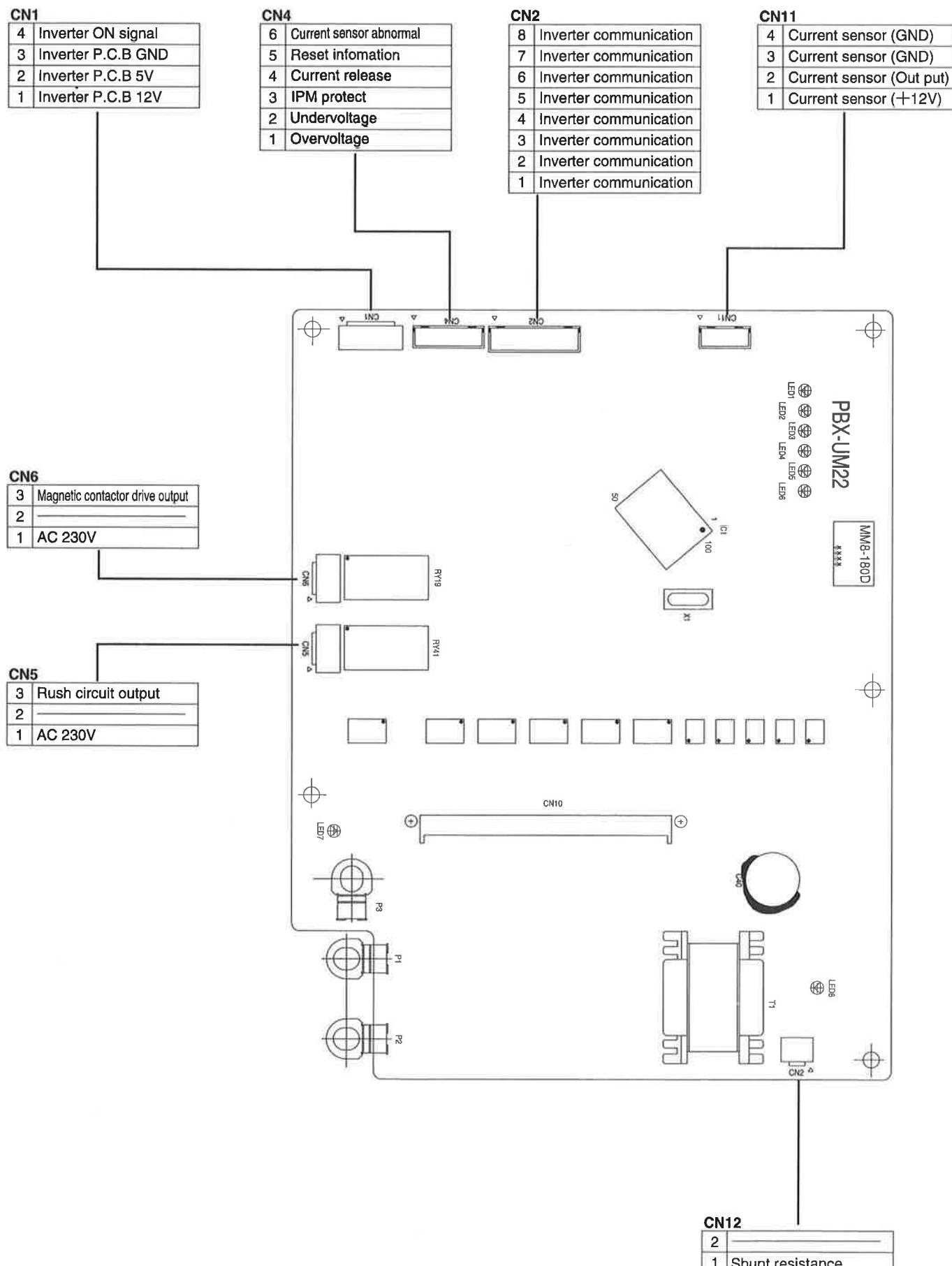
4 phase	6
3 phase	5
2 phase	4
1 phase	3
12V	2
12V	-1

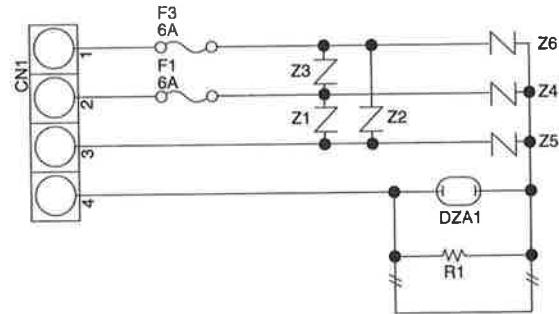
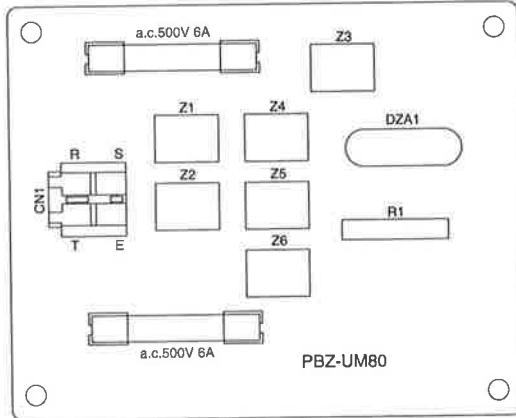
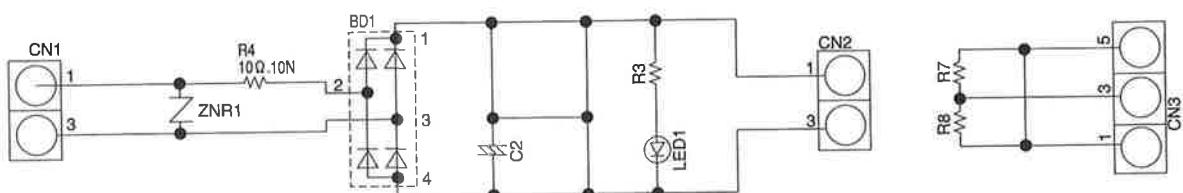
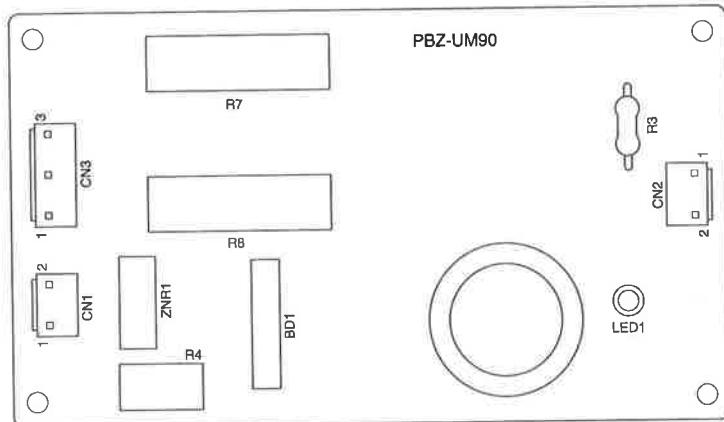
CN 13

NOTE
The diagram shows the CU-P280MX1XP

■UMXR outdoor unit

5.Inverter control P.C.B(Outline drawing)



Absorber P.C.B [PBZ-UM80]**Inverter power P.C.B [PBZ-UM90]**

4 INDOOR UNIT

1.SPECIFICATIONS (INDOOR UNIT)

One way cassette type

HEAT PUMP TYPE

ITEM			1HP						
Model Name	Power Source	220-240V	CS-P28DM1HP						
		50Hz ,1φ							
	Panel	CZ-01KPD01P							
(1) Cooling Capacity		kW kcal/h BTU/h	2.8 2,400 9,600						
(2) Heating Capacity		kW kcal/h BTU/h	3.2 2,750 11,000						
Standard Air Volume		m ³ /min cfm	Hi 7.5 Me 6.5 Lo 5.5 265 229 194						
External Static Pressure		mmAq Pa	0 0						
Air Inlet			Lower sided Suction						
Air Outlet			Lower sided Blow-out						
Outside Dimension(H×W×D) ※ Set the panel		mm inch	(210+9)×1090×430 (8-1/4+3/8)×42-15/16×16-15/16						
Noise Level		dB(A)	Hi 38 Me 36 Lo 31						
Net Weight		kg lbs	23(17+6) 51(38+13)						
Piping Connection	Refrigerant	Gas	mm(inch)	O.D φ 12.7(1/2)Flared type					
		Liquid	mm(inch)	O.D φ 9.52(3/8)Flared type					
Drain		mm	O.D φ 32(Accessory drain hose.I.D φ 32)						
Fan	Type,number of set			Cross-flow fan-1					
	Air Volume Control			Three-Step and Auto mode(Remote Controller)					
	Motor	Type		4-pole single phase induction motor					
		Input	kW	0.03					
		Rated Output	kW	0.015					
Air-heat exchanger			Louver-fin type						
Refrigerant Control			Electronic expansion valve						
Refrigerant			-						
Safety Devices			Internal thermostat (Fan motor)						
Accessory			Installation panel Flexible drain hose						
External Finish			Galvanized steel plate finished with baked scrylic-resin						
Air Filter(Factory set)			Polypropylene regin Honeycomb(Washable)						
Running Adjustment			Remote Controller CZ-10RT33PA						
			Thermostat(Main body)						

(1) Cooling capacities are based on temp.27°C D.B.(80.6°F D.B.),19.0°C W.B.(66.2°F W.B.)and outdoor air temp.

35°C D.B.(95°F D.B.),24°C W.B.(75.2°F W.B.)

(2) Heating capacities are based on indoor temp.20°C D.B.(68.0°F D.B.)and outdoor sir temp.7°C D.B.(44.6°F D.B.)6°C W.B.(42.8°F D.B.)

ELECTRICAL DATA [INDOOR UNIT] (50Hz)

ITEM		MODEL			CS-P28DM1HP						
Volts	V	220	230	240							
Phase		Single	Single	Single							
Power Consumption	kW	Cool	0.03	0.03	0.03						
		Heat	0.03	0.03	0.03						
Running Current	A	Cool	0.14	0.14	0.13						
		Heat	0.14	0.14	0.13						
Starting Current	A		0.25	0.25	0.25						
Power Factor	%	Cool	97.4	93.2	96.2						
		Heat	97.4	93.2	96.2						

SPECIFICATIONS (INDOOR UNIT)

Four way cassette type

HEAT PUMP TYPE

ITEM			1. 25HP	1.5HP	2.0HP	2.5HP			
Model Name	Power Source	220-240V 50Hz ,1φ	CS-P36UM1HP	CS-P45UM1HP	CS-P56UM1HP	CS-P71UM1HP			
	PANEL		CZ-06KPU1VP	CZ-06KPU1VP	CZ-06KPU1VP	CZ-06KPU1VP			
(1)Cooling Capacity	kW	3.60	4.50	5.60	7.10				
	kcal/h	3,100	3,900	4,800	6,100				
	BTU/h	12,400	15,500	19,200	24,400				
(2)Heating Capacity	kW	4.00	5.00	6.30	8.00				
	kcal/h	3,450	4,300	5,400	6,900				
	BTU/h	13,700	17,200	21,600	27,600				
Standard Air Volume	m ³ /min	Hi 12 Me 11 Lo 9			Hi 14 Me 12 Lo 10	Hi 17 Me 15 Lo 13			
	cfm	424 391 320			497 424 355	604 533 462			
External Static Pressure	mmAq	0							
	Pa	0							
Air Inlet			Lower sided Suction						
Air Outlet			Lower sided Blow-out						
Duct Connection			*Available						
Outside Dimension(H × W × D)	mm	(240+30) × 950 × 950							
	inch	(9·9/16+1·3/16) × 37·13/32 × 37·13/32							
Noise Level	dB(A)	Hi 32 Me 30 Lo 28							
Net Weight	kg	25+5							
	lbs	55+11							
Piping	Refrigerant	Gas	O.D. φ 12.7(1/2)Flared type		O.D. φ 15.88(5/8)Flared type				
		Liquid	O.D. φ 9.52(3/8)Flared type						
Connection	Drain	mm	O.D. φ 32(Accessory drain hose;I.D. φ 32)						
Fan	Type,number of set		Turbo fan -1						
	Air Volume Control		Three-Step and Auto mode						
	Motor	Type	6-pole single phase induction motor						
		Input	kW			0.065	0.09		
		Rated Output	kW			0.02	0.03		
Air-heat exchanger			Louver-fin type						
Refrigerant Control			Electronic expansion valve						
Refrigerant			—						
Safety Devices			Internal thermostat						
Accessory			Flexible drain hose						
External Finish			ABS resin (Decorative panel)						
Running	Control Switch		Wireless or Wired Remote Controller						
Adjustment	Room temperature		Thermostat(Main Body)						
Air Filter (Factory set)			Polypropylene Honeycomb (Washable)						

(1)Cooling capacities are based on temp.27°CDB.(80.6°FDB.),19.0°CWB.(66.2°FWB.)and outdoor air temp.

35°CDB.(95°FDB.),24°CWB.(75.2°FWB.)

(2)Heating capacities are based on indoor temp.20°CDB.(68.0°FDB.)and outdoor sir temp.7°CDB.(44.6°FDB.)6°CWB.(42.8°FDB.)

(3) * Supply duct and fresh air duct are connectable. Supply duct requées the special parts.

ELECTRICAL DATA [INDOOR UNIT](50Hz)

			CS-P36UM1HP CS-P45UM1HP			CS-P56UM1HP			CS-P71UM1HP		
Volts	V		220	230	240	220	230	240	220	230	240
Phase			Single	Single	Single	Single	Single	Single	Single	Single	Single
Power Consumption	kW	Cool	0.065	0.065	0.065	0.065	0.065	0.065	0.090	0.090	0.090
		Heat	0.065	0.065	0.065	0.065	0.065	0.065	0.090	0.090	0.090
Running Current	A	Cool	0.31	0.30	0.29	0.31	0.30	0.29	0.42	0.40	0.39
		Heat	0.31	0.30	0.29	0.31	0.30	0.29	0.42	0.40	0.39
Starting Current	A		0.56	0.56	0.56	0.56	0.56	0.56	0.76	0.76	0.76
Power Factor	%	Cool	95.3	94.2	93.4	95.3	94.2	93.4	97.4	97.8	96.2
		Heat	95.3	94.2	93.4	95.3	94.2	93.4	97.4	97.8	96.2

3.OUTDOOR UNIT

SPECIFICATIONS (INDOOR UNIT)

Four way cassette type

HEAT PUMP TYPE

ITEM			3. OHP		4. OHP		5. OHP	
Model Name	Power Source	220~240V 50Hz ,1 φ	CS-P80UM1HP		CS-P112UM1HP		CS-P140UM1HP	
	PANEL		CZ-06KPU1VP		CZ-06KPU1VP		CZ-06KPU1VP	
(1) Cooling Capacity	kW	8.00		11.20		14.00		
	kcal/h	6,900		9,600		12,050		
	BTU/h	27,600		38,400		48,200		
(2) Heating Capacity	kW	9.00		12.50		16.00		
	kcal/h	7,750		10,750		13,750		
	BTU/h	31,000		43,000		55,000		
Standard Air Volume	m ³ /min	Hi 20 Me 17 Lo 15		Hi 26 Me 22 Lo 19		Hi 30 Me 25 Lo 20		
	cfm	710 604 533		923 781 675		1,065 888 710		
External Static Pressure	mmAq			0				
	Pa			0				
Air Inlet			Lower sided Suction					
Air Outlet			Lower sided Blow-out					
Duct Connection			*Available					
Outside Dimension(H × W × D)	mm	(240+30) × 950 × 950		(290+30) × 950 × 950				
	inch	(9·9/16+1·3/16) × 37·13/32 × 37·13/32		(11·1/32+1·3/16) × 37·13/32 × 37·13/32				
Noise Level	dB(A)	Hi 35 Me 32 Lo 30		Hi 40 Me 38 Lo 36		Hi 43 Me 40 Lo 38		
Net Weight	kg	25+5		31+5		34+5		
	lbs	55+11		68.2+11		74.8+11		
Piping	Refrigerant	Gas	mm(inch)	O.D. φ 15.88(5/8)Flared type		O.D. φ 19.05(3/4)Flared type		
		Liquid	mm(inch)	O.D. φ 9.52(3/8)Flared type		O.D. φ 9.52(3/8)Flared type		
Connection	Drain		mm	O.D. φ 32(Accessory drain hose;I.D. φ 32)				
Fan	Type,number of set			Turbo fan -1				
	Air Volume Control			Three – Step and Auto mode				
	Motor	Type		6-pole single phase induction motor				
		Input	kW	0.092		0.15		0.21
		Rated Output	kW	0.03		0.05		0.095
Air-heat exchanger				Louver-fin type				
Refrigerant Control				Electronic expansion valve				
Refrigerant				—				
Safety Devices				Internal thermostat				
Accessory				Flexible drain hose				
External Finish				ABS resin (Decorative panel)				
Running Adjustment	Control Switch			Wireless or Wired Remote Controller				
	Room temperature			Thermostat(Main Body)				
Air Filter (Factory set)				Polypropylene Honeycomb (Washable)				

(1) Cooling capacities are based on temp.27°CDB.(80.6°FDB.),19.0°CWB.(66.2°FWB.)and outdoor air temp.

35°CDB.(95°FDB.),24°CWB.(75.2°FWB.)

(2) Heating capacities are based on indoor temp.20°CDB.(68.0°FDB.)and outdoor sir temp.7°CDB.(44.6°FDB.)6°CWB.(42.8°FWB.)

(3) * Supply duct and fresh air duct are connectable. Supply duct requées the special parts.

ELECTRICAL DATA [INDOOR UNIT](50Hz)

			CS-P80UM1HP			CS-P112UM1HP			CS-P140UM1HP		
Volts	V		220	230	240	220	230	240	220	230	240
Phase			Single	Single	Single	Single	Single	Single	Single	Single	Single
Power Consumption	kW	Cool	0.092	0.092	0.092	0.150	0.150	0.150	0.210	0.210	0.210
		Heat	0.092	0.092	0.092	0.150	0.150	0.150	0.210	0.210	0.210
Running Current	A	Cool	0.43	0.41	0.39	0.71	0.68	0.65	0.99	0.95	0.91
		Heat	0.43	0.41	0.39	0.71	0.68	0.65	0.99	0.95	0.91
Starting Current	A		0.77	0.77	0.77	1.28	1.28	1.28	1.78	1.78	1.78
Power Factor	%	Cool	97.3	97.6	98.3	96.0	95.9	96.2	96.4	96.1	96.2
		Heat	97.3	97.6	98.3	96.0	95.9	96.2	96.4	96.1	96.2

SPECIFICATIONS (INDOOR UNIT)

Hide Away type
HEAT PUMP TYPE

ITEM			1.5HP	2. 0.HP	2. 5HP
Model Name	Power Source	220-240V 50Hz ,1 φ	CS-P45EM1HP	CS-P56EM1HP	CS-P71EM1HP
(1)Cooling Capacity		kW kcal/h BTU/h	4.50 3,900 15,500	5.60 4,800 19,200	7.10 6,100 24,400
(2)Heating Capacity		kW kcal/h BTU/h	5.00 4,300 17,200	6.30 5,400 21,600	8.00 6,900 27,600
Standard Air Volume		m ³ /min cfm	Hi 15 Me 13 Lo 11 529 459 388	Hi 17 Me 15 Lo 13 600 529 459	Hi 20 Me 18 Lo 16 706 635 565
External Static Pressure		mmAq Pa	7, 10 69, 98	10, 15 98, 147	
Air Inlet			Backward suction		
Air Outlet			Front blow-out		
Outside Dimension(H×W×D)		mm inch	385 × 650 × 790 15-5/32 × 25-19/32 × 31-7/64		
Noise Level		dB(A)	(7mmAq)Hi 37 Me 34 Lo32 (10mmAq)Hi 38 Me 35 Lo 33		
Net Weight		kg lbs	42 92.6	52 114.6	52 114.6
Piping Connection	Refrigerant	Gas Liquid	mm(inch) mm(inch)	O.D φ 12.7(1/2)Flared type O.D φ 9.52(3/8)Flared type	O.D. φ 15.88(5/8)Flared type
	Drain	Upper Lower	mm	(At the time of setting up CZ-06DMEV4F (option),O.D. φ 32) O.D. φ 32(Right and left both sides can be connected)	
Fan	Type,number of set			Sirocco fan-1	Sirocco fan-2
	Air Volume Control			Three-Step mode (Remote Controller)	
	Motor	Type		4-pole single phase induction motor	
		Input Rated Output	kW kW	0.22 0.13	0.23 0.15
Air-heat exchanger				Louver-fin type	
Refrigerant Control				Electronic expansion valve	
Refrigerant				-	
Safety Devices				Internal thermostat (Fan motor)	
Accessory				Flexible drain hose	
External Finish				Galvanized steel plate finished with baked acrylic-resin	
Running Adjustment	Control Switch Room temperature			Remote Controller CZ-10RT33P Thermostat(Main body)	
Filter Box (Option)				CZ-02FCE01	CZ-03FCE01N
Pre-filter (Option)				CZ-02LFE01 Long life (Washable)CZ-02LFE01	
Middle efficiency filter (Option)				CZ-03HFE01(colometric70%)	
High efficiency filter (Option)				CZ-03SHFE01(colometric90%)	

(1)Cooling capacities are based on temp.27°CDB.(80.6°FDB.),19.0°CWB.(66.2°FWB.)and outdoor air temp.

35°CDB.(95°FDB.),24°CWB.(75.2°FWB.)

(2)Heating capacities are based on indoor temp.20°CDB.(68.0°FDB.)and outdoor sir temp.7°CDB.(44.6°FDB.)6°CWB.(42.8°FDB.)

ELECTRICAL DATA [INDOOR UNIT](50Hz)

			CS-P45EM1HP			CS-P56EM1HP			CS-P71EM1HP		
Volts	V		220	230	240	220	230	240	220	230	240
Phase			Single	Single	Single	Single	Single	Single	Single	Single	Single
Power Consumption	kW	Cool	0.22	0.22	0.22	0.23	0.23	0.23	0.32	0.32	0.32
		Heat	0.22	0.22	0.22	0.23	0.23	0.23	0.32	0.32	0.32
Running Current	A	Cool	1.04	0.99	0.95	1.08	1.03	0.99	1.55	1.48	1.42
		Heat	1.04	0.99	0.95	1.08	1.03	0.99	1.55	1.48	1.42
Starting Current	A		1.87	1.87	1.87	1.94	1.94	1.94	2.79	2.79	2.79
Power Factor	%	Cool	96.2	96.6	96.5	96.8	97.1	96.8	93.8	94.0	93.9
		Heat	96.2	96.6	96.5	96.8	97.1	96.8	93.8	94.0	93.9

4. INDOOR UNIT

SPECIFICATIONS (INDOOR UNIT)

Hide Away type

HEAT PUMP TYPE

ITEM			3. OHP	4. OHP	5. OHP	
Model Name	Power Source	220~240V 50Hz ,1 φ	CS-P80EM1HP	CS-P112EM1HP	CS-P140EM1HP	
(1) Cooling Capacity	kW	8.00	11.20	14.00		
	kcal/h	6,900	9,600	12,050		
	BTU/h	27,600	38,400	48,200		
(2) Heating Capacity	kW	9.00	12.50	16.00		
	kcal/h	7,750	10,750	13,750		
	BTU/h	31,000	43,000	55,000		
Standard Air Volume	m³/min	Hi 20 Me 18 Lo 16	Hi 35 Me 30 Lo 25	Hi 40 Me 35 Lo 30		
	cfm	706 635 565	1,236 1,059 883	1,413 1,236 1,059		
External Static Pressure	mmAq		10, 15			
	Pa		98, 147			
Air Inlet			Backward suction			
Air Outlet			Front blow-out			
Outside Dimension(H × W × D)	mm	385 × 850 × 790	385 × 1350 × 790			
	inch	15-5/32 × 33-15/32 × 31-7/64	15-5/32 × 53-5/32 × 31-7/64			
Noise Level	dB(A)	(10mmAq)Hi 40 Me 36 Lo 33	(10mmAq)Hi 41 Me 37 Lo 34	(10mmAq)Hi 42 Me 38 Lo 35		
		(15mmAq)Hi 42 Me 39 Lo 36	(15mmAq)Hi 43 Me 40 Lo 37	(15mmAq)Hi 44 Me 42 Lo 40		
	kg	52	81	82		
	lbs	114.6	178.6	180.8		
Piping Connection	Refrigerant	Gas	mm(inch)	O.D. φ 15.88(5/8)Flared type	O.D. φ 19.05(1/2)Flared type	
		Liquid	mm(inch)	O.D. φ 9.52(3/8)Flared type	O.D. φ 9.52(3/8)Flared type	
	Drain	Upper	mm	(At the time of setting up CZ-06DMEV4F (option), O.D. φ 32)		
		Lower		O.D. φ 32(Right and left both sides can be connected)		
Fan	Type, number of set			Sirocco fan-2	Sirocco fan-2	Sirocco fan-2
	Air Volume Control			Three-Step mode (RemoteController)		
	Type			4-pole single phase induction motor		
	Motor	Input	kW	0.33	0.44	0.49
		Rated Output	kW	0.21	0.26	0.35
Air-heat exchanger			Louver-fin type			
Refrigerant Control			Electronic expansion valve			
Refrigerant			-			
Safety Devices			Internal thermostat (Fan motor)			
Accessory			Flexible drain hose			
External Finish			Galvanized steel plate finished with baked acrylic-resin			
Running Adjustment	Control Switch			Remote Controller CZ-10RT33P		
	Room temperature			Thermostat(Main body)		
Filter Box (Option)			CZ-03FCE01	CZ-06FCE01	CZ-06FCE01	
Pre-filter (Option)			Long life (Washable)CZ-03LFE01	Long life (Washable)CZ-06LFE01		
Middle efficiency filter (Option)			CZ-03HFE01(colometric70%)	CZ-06HFE01(colometric70%)		
High efficiency filter (Option)			CZ-03SHFE01(colometric90%)	CZ-06SHFE01(colometric90%)		

(1) Cooling capacities are based on temp.27°CDB.(80.6°FDB.),19.0°CWB.(66.2°FWB.)and outdoor air temp.

35°CDB.(95°FDB.),24°CWB.(75.2°FWB.)

(2) Heating capacities are based on indoor temp.20°CDB.(68.0°FDB.)and outdoor sir temp.7°CDB.(44.6°FDB.)6°CWB.(42.8°FDB.)

ELECTRICAL DATA [INDOOR UNIT](50Hz)

			CS-P80EM1HP			CS-P112EM1HP			CS-P140EM1HP		
Volts	V		220	230	240	220	230	240	220	230	240
Phase			Single	Single	Single	Single	Single	Single	Single	Single	Single
Power Consumption	kW	Cool	0.33	0.33	0.33	0.44	0.44	0.44	0.49	0.49	0.49
		Heat	0.33	0.33	0.33	0.44	0.44	0.44	0.49	0.49	0.49
Running Current	A	Cool	1.53	1.46	1.40	2.10	2.01	1.93	2.30	2.20	2.11
		Heat	1.53	1.46	1.40	2.10	2.01	1.93	2.30	2.20	2.11
Starting Current	A		2.75	2.75	2.75	3.78	3.78	3.78	4.14	4.14	4.14
Power Factor	%	Cool	98.0	98.3	98.2	95.2	95.2	95.0	96.8	96.8	96.8
		Heat	98.0	98.3	98.2	95.2	95.2	95.0	96.8	96.8	96.8

4.INDOOR UNIT

SPECIFICATIONS (INDOOR UNIT)

Wall type

HEAT PUMP TYPE

ITEM			0. 8HP			1. 25HP			1. 5HP			
Model Name	Power Source	220-240V 50Hz ,1φ	CS-P22KM1HP			CS-P36KM1HP			CS-P45KM1HP			
(1)Cooling Capacity			kW	2.2			3.60			4.50		
			kcal/h	1,900			3,100			3,900		
			BTU/h	7,600			12,400			15,500		
(2)Heating Capacity			kW	2.5			4.00			5.00		
			kcal/h	2,150			3,450			4,300		
			BTU/h	8,600			13,700			17,200		
Standard Air Volume			m³/min	Hi 13 Me 11 Lo 9			Hi 14 Me 12 Lo 10			Hi 14 Me 12 Lo 10		
			cfm	459 388 318			494 424 353			494 424 353		
External Static Pressure			mmAq	0			0			0		
Air Inlet			Pa	0			0			0		
Air Outlet				Front suction			Front blow-out			Front blow-out		
Outside Dimension(H × W × D)			mm	360 × 1130 × 200			14-11/64 × 44-31/64 × 7-7/8			14-11/64 × 44-31/64 × 7-7/8		
Noise Level			dB(A)	Hi 38 Me 35 Lo 33			Hi 39 Me 36 Lo 34			Hi 39 Me 36 Lo 34		
Net Weight			kg	18			40			40		
Piping Connection	Refrigerant	Gas Liquid	mm(inch)	O.D φ 12.7(1/2)Flared type			O.D φ 9.52(3/8)Flared type			O.D φ 9.52(3/8)Flared type		
			mm(inch)	O.D φ 20(Outer diameter)			O.D φ 20(Outer diameter)			O.D φ 20(Outer diameter)		
Drain			mm	Cross-flow fan-1			Three-Step and Auto mode(Remote Controller)			Three-Step and Auto mode(Remote Controller)		
Fan	Type,number of set			4-pole single phase induction motor			4-pole single phase induction motor			4-pole single phase induction motor		
	Air Volume Control			0.043			0.02			0.02		
	Motor	Type	kW									
		Input	kW									
Rated Output			kW									
Air-heat exchanger				Louver-fin type			Louver-fin type			Louver-fin type		
Refrigerant Control				Electronic expansion valve			Electronic expansion valve			Electronic expansion valve		
Refrigerant				-			-			-		
Safety Devices				Internal thermostat (Fan motor)			Internal thermostat (Fan motor)			Internal thermostat (Fan motor)		
Accessory				Installation panel			Flexible drain hose			Flexible drain hose		
External Finish				Galvanized steel plate finished with baked acrylic-resin			Galvanized steel plate finished with baked acrylic-resin			Galvanized steel plate finished with baked acrylic-resin		
Air Filter(Factory set)				Polypropylene resin Honeycomb(Washable)			Polypropylene resin Honeycomb(Washable)			Polypropylene resin Honeycomb(Washable)		
Running Adjustment				Remote Controller CZ-10RT33P			Remote Controller CZ-10RT33P			Remote Controller CZ-10RT33P		
				Thermostat(Main body)			Thermostat(Main body)			Thermostat(Main body)		

(1)Cooling capacities are based on temp.27°C.D.B.(80.6°F.D.B.),19.0°C.W.B.(66.2°F.W.B.)and outdoor air temp.

35°C.D.B.(95°F.D.B.),24°C.W.B.(75.2°F.W.B.)

(2)Heating capacities are based on indoor temp.20°C.D.B.(68.0°F.D.B.)and outdoor sir temp.7°C.D.B.(44.6°F.D.B.)6°C.W.B.(42.8°F.D.B.)

ELECTRICAL DATA [INDOOR UNIT](50Hz)

ITEM	MODEL			CS-P22KM1HP			CS-P36KM1HP			CS-P45KM1HP		
	V	220	230	240	220	230	240	220	230	240	220	230
Volts	V	Single	Single	Single	Single	Single	Single	Single	Single	Single	Single	Single
Phase		Cool	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
Power Consumption	kW	Heat	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
Running Current	A	Cool	0.20	0.19	0.19	0.20	0.19	0.19	0.20	0.19	0.19	0.19
Starting Current	A		0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Power Factor	%	Cool	97.7	98.4	94.3	97.7	98.4	94.3	97.7	98.4	94.3	97.7
		Heat	97.7	98.4	94.3	97.7	98.4	94.3	97.7	98.4	94.3	97.7

SPECIFICATIONS (INDOOR UNIT)

Wall type

HEAT PUMP TYPE

ITEM			2. OHP			2. 5HP						
Model Name	Power Source	220~240V 50Hz, 1φ	CS-P56KM1HP			CS-P71KM1HP						
(1) Cooling Capacity			kW kcal/h BTU/h			5.6 4,800 19,200						
(2) Heating Capacity			kW kcal/h BTU/h			6.3 5,400 21,600						
Standard Air Volume			m³/min	Hi 18 Me 16 Lo 13		Hi 18 Me 16 Lo 13						
			cfm	635 565 459		635 565 459						
External Static Pressure			mmAq	0								
			Pa	0								
Air Inlet				Front suction								
Air Outlet				Front blow-out								
Outside Dimension(H × W × D)			mm	360 × 1390 × 200								
			inch	14-11/64 × 54-23/32 × 7-7/8								
Noise Level			dB(A)	Hi 40 Me 37 Lo 35		Hi 39 Me 36 Lo 34						
Net Weight			kg	22								
			lbs	48.5								
Piping Connection	Refrigerant	Gas Liquid	mm(inch)	O.D. φ 15.88(5/8)Flared type								
			mm(inch)	O.D. φ 9.52(3/8)Flared type								
Drain			mm	O.D. φ 20(Outer diameter)								
Fan	Type,number of set			Cross-flow fan-1								
	Air Volume Control			Three-Step and Auto mode(Remote Controller)								
	Motor	Type		4-pole single phase induction motor								
		Input	kW	0.057								
		Rated Output	kW	0.025								
Air-heat exchanger				Louver-fin type								
Refrigerant Control				Electronic expansion valve								
Refrigerant				-								
Safety Devices				Internal thermostat (Fan motor)								
Accessory				Installation panel								
				Flexible drain hose								
External Finish				Galvanized steel plate finished with baked acrylic-resin								
Air Filter(Factory set)				Polypropylene resin Honeycomb(Washable)								
Running Adjustment				Remote Controller CZ-10RT33P								
				Thermostat(Main body)								

(1) Cooling capacities are based on temp.27°CDB.(80.6°FDB.),19.0°CWB.(66.2°FWB.)and outdoor air temp.

35°CDB.(95°FDB.),24°CWB.(75.2°FWB.)

(2) Heating capacities are based on indoor temp.20°CDB.(68.0°FDB.)and outdoor sir temp.7°CDB.(44.6°FDB.)6°CWB.(42.8°FWB.)

ELECTRICAL DATA [INDOOR UNIT](50Hz)

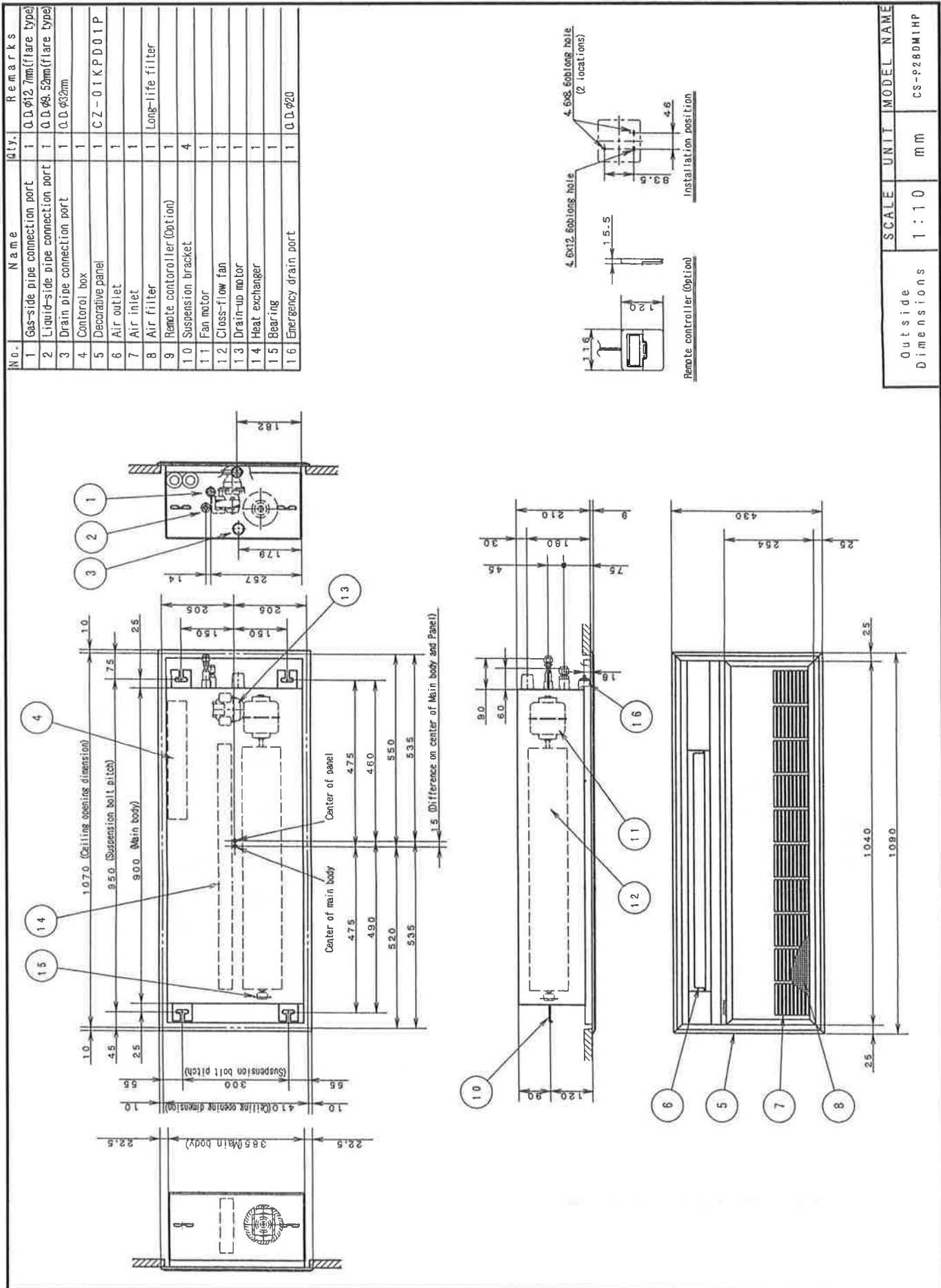
ITEM		MODEL			CS-P56KM1HP			CS-P71KM1HP					
Volts	V		220	230	240	220	230	240					
Phase			Single	Single	Single	Single	Single	Single					
Power Consumption	kW	Cool	0.057	0.057	0.057	0.057	0.057	0.057					
		Heat	0.057	0.057	0.057	0.057	0.057	0.057					
Running Current	A	Cool	0.27	0.26	0.25	0.27	0.26	0.25					
		Heat	0.27	0.26	0.25	0.27	0.26	0.25					
Starting Current	A		0.49	0.49	0.49	0.49	0.49	0.49					
Power Factor	%	Cool	96.0	95.3	95.0	96.0	95.3	95.0					
		Heat	96.0	95.3	95.0	96.0	95.3	95.0					

4. INDOOR UNIT

2. OUTSIDE DIMENSION

One-way cassette type

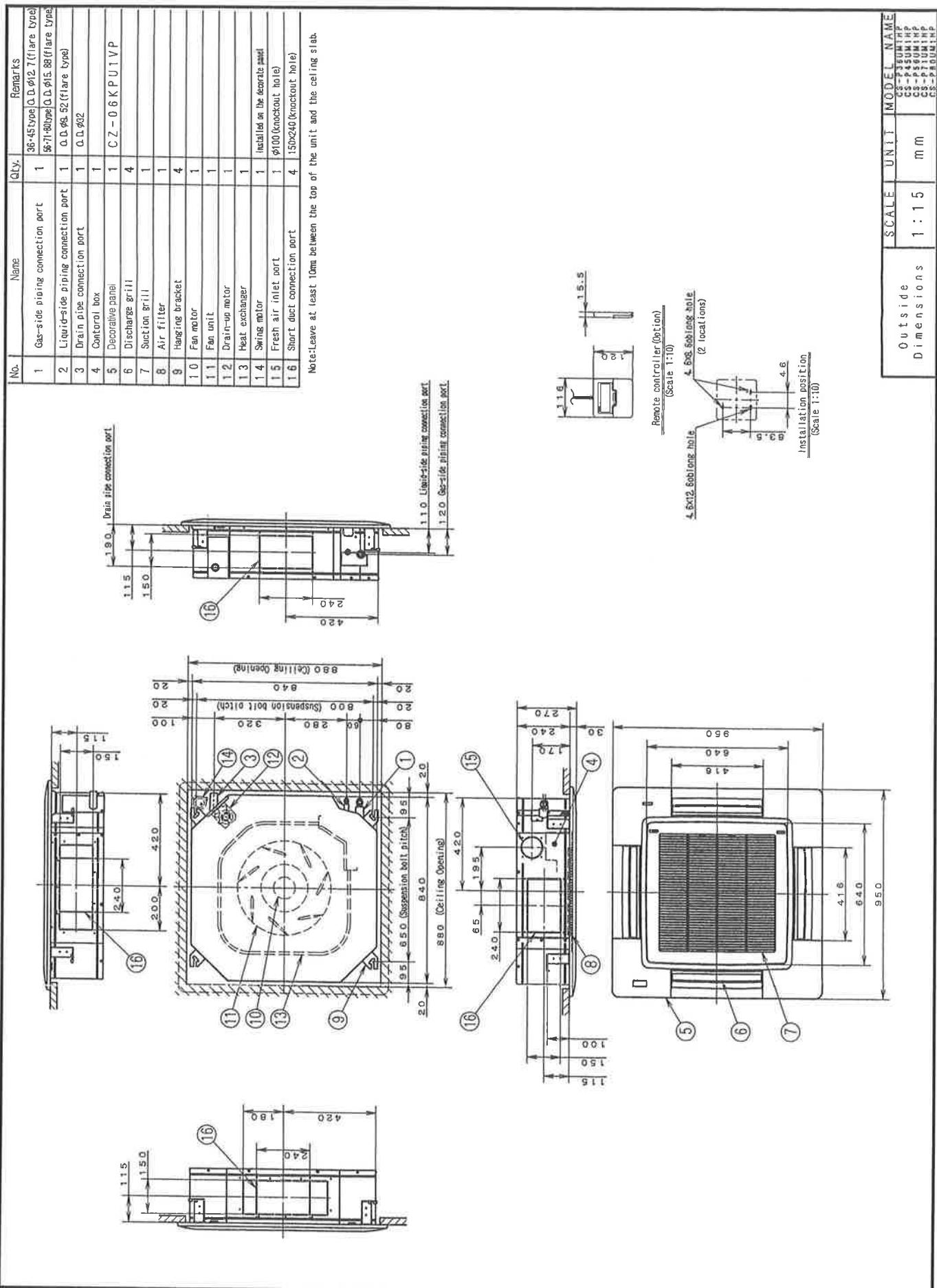
■ Heat pump type(CS-P28DM1HP)



4. INDOOR UNIT

Four-way cassette type

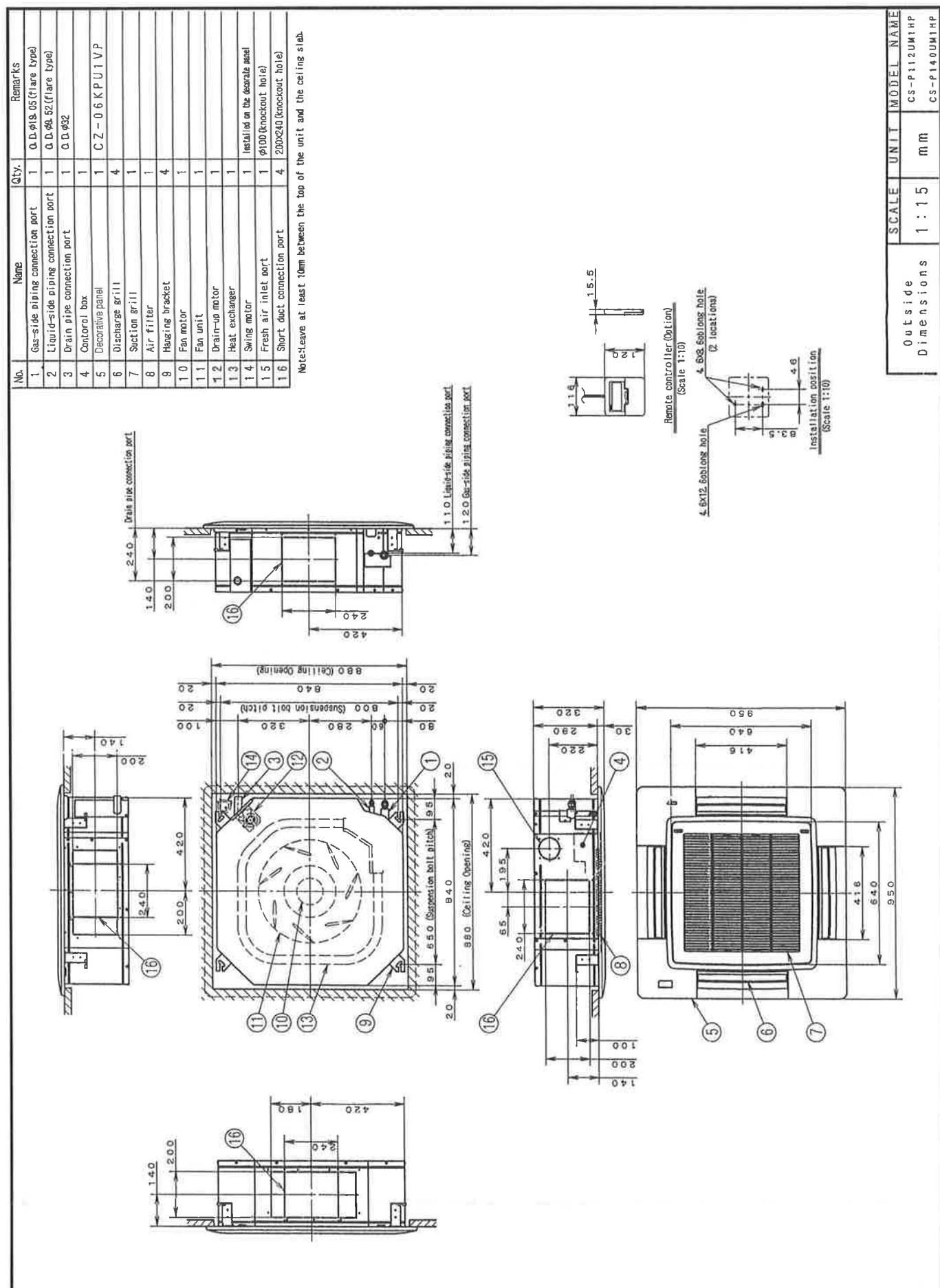
■ Heat pump type(CS-P36UM1HP,P45UM1HP,P56UM1HP,P71UM1HP,P80UM1HP)



4. INDOOR UNIT

Four-way cassette type

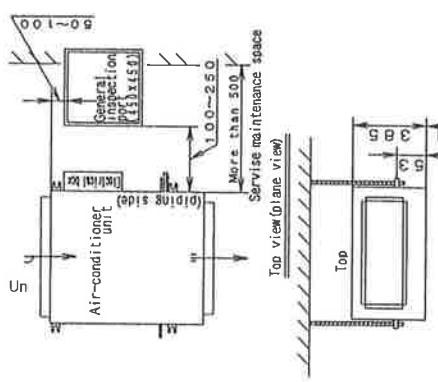
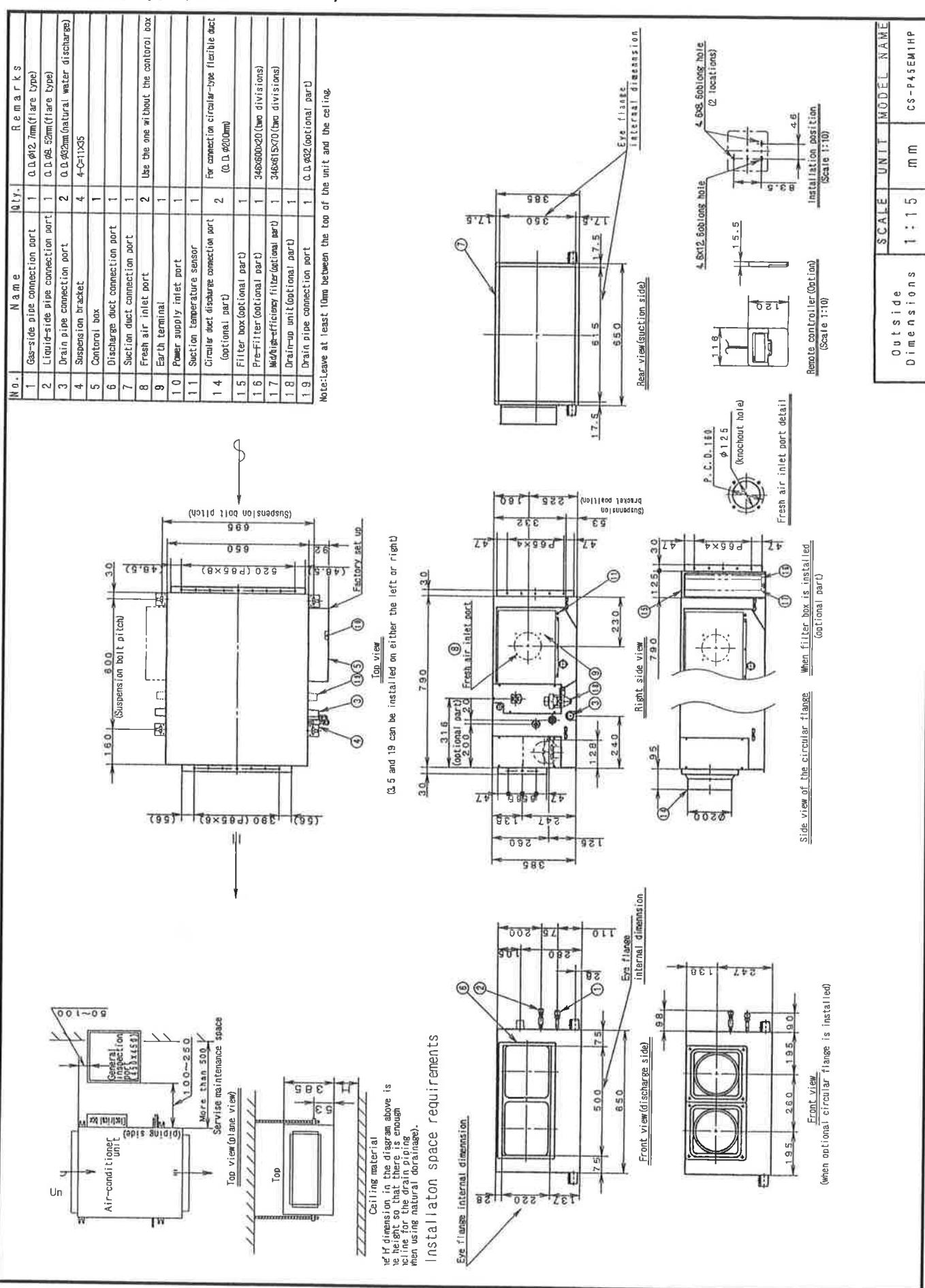
■ Heat pump type(CS-P112UM1HP,P140UM1HP)



4. INDOOR UNIT

Hide-Away type

■ Heat pump type(CS-P45EM1HP)



Installation space requirements

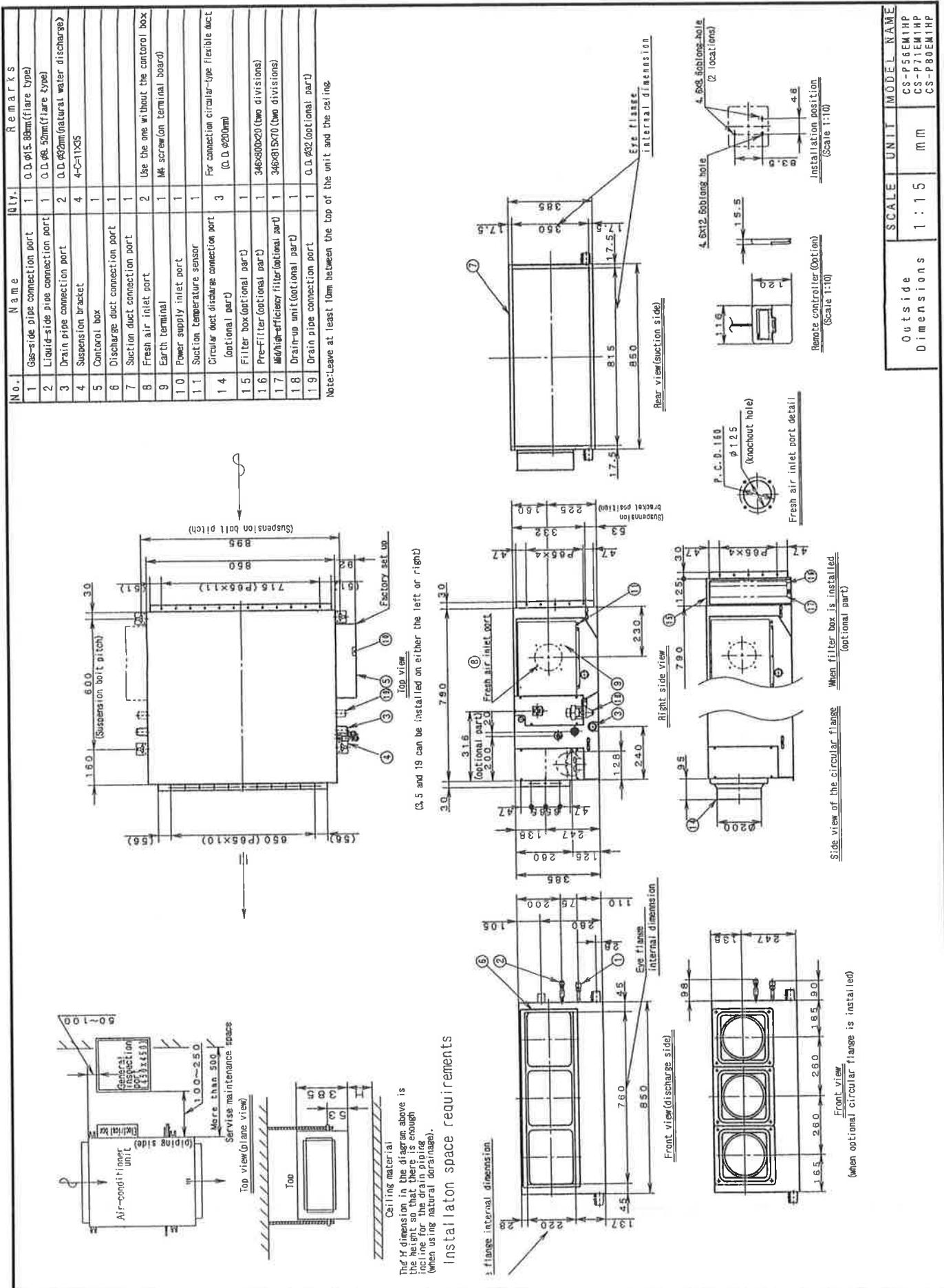
if H dimension

is less than the height so that there is enough clearance for the drain piping when using natural drainage).

4. INDOOR UNIT

Hide-Away type

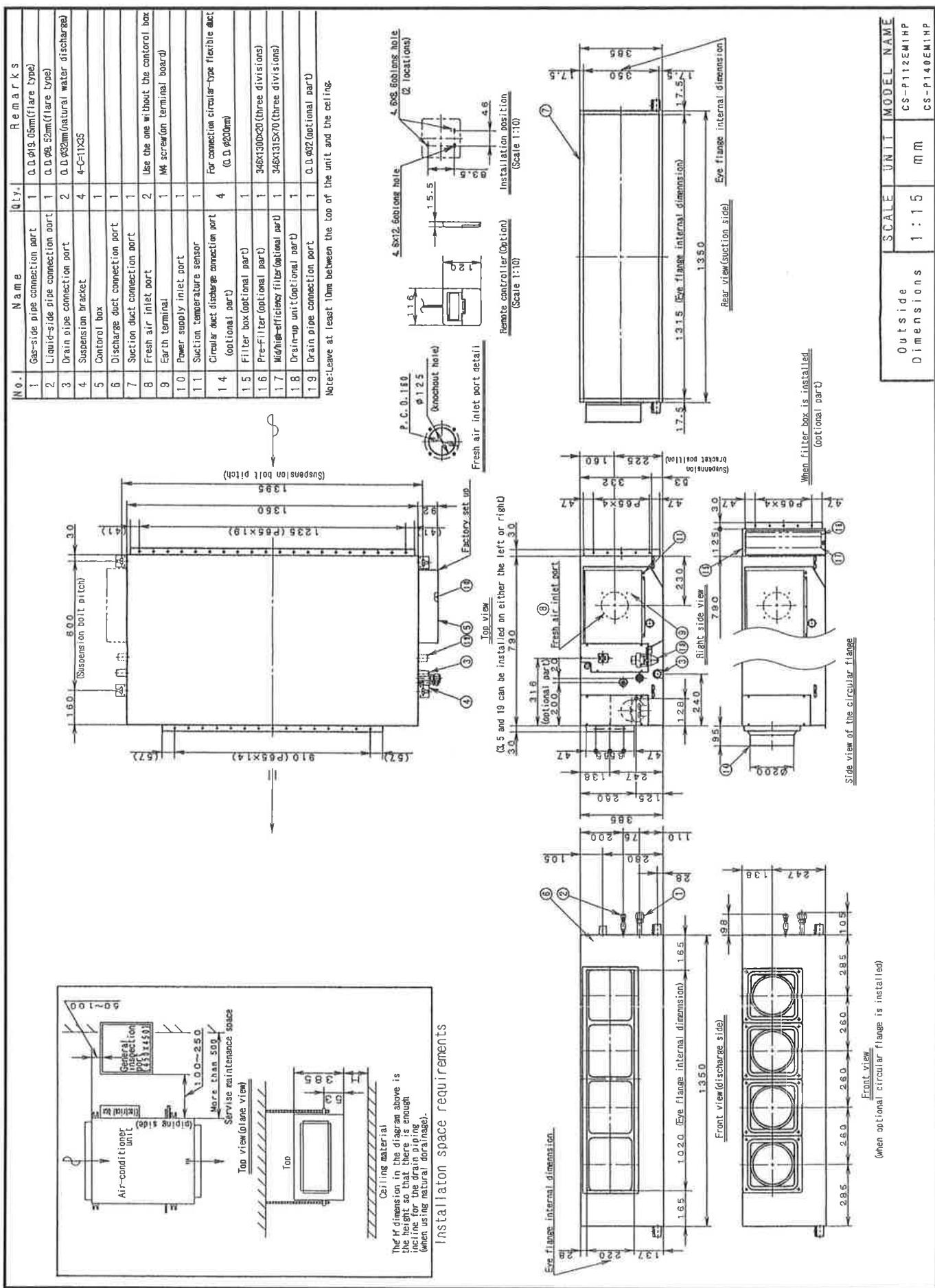
■ Heat pump type(CS-P56EM1HP, P71EM1HP, P80EM1HP)



4. INDOOR UNIT

Hide-Away type

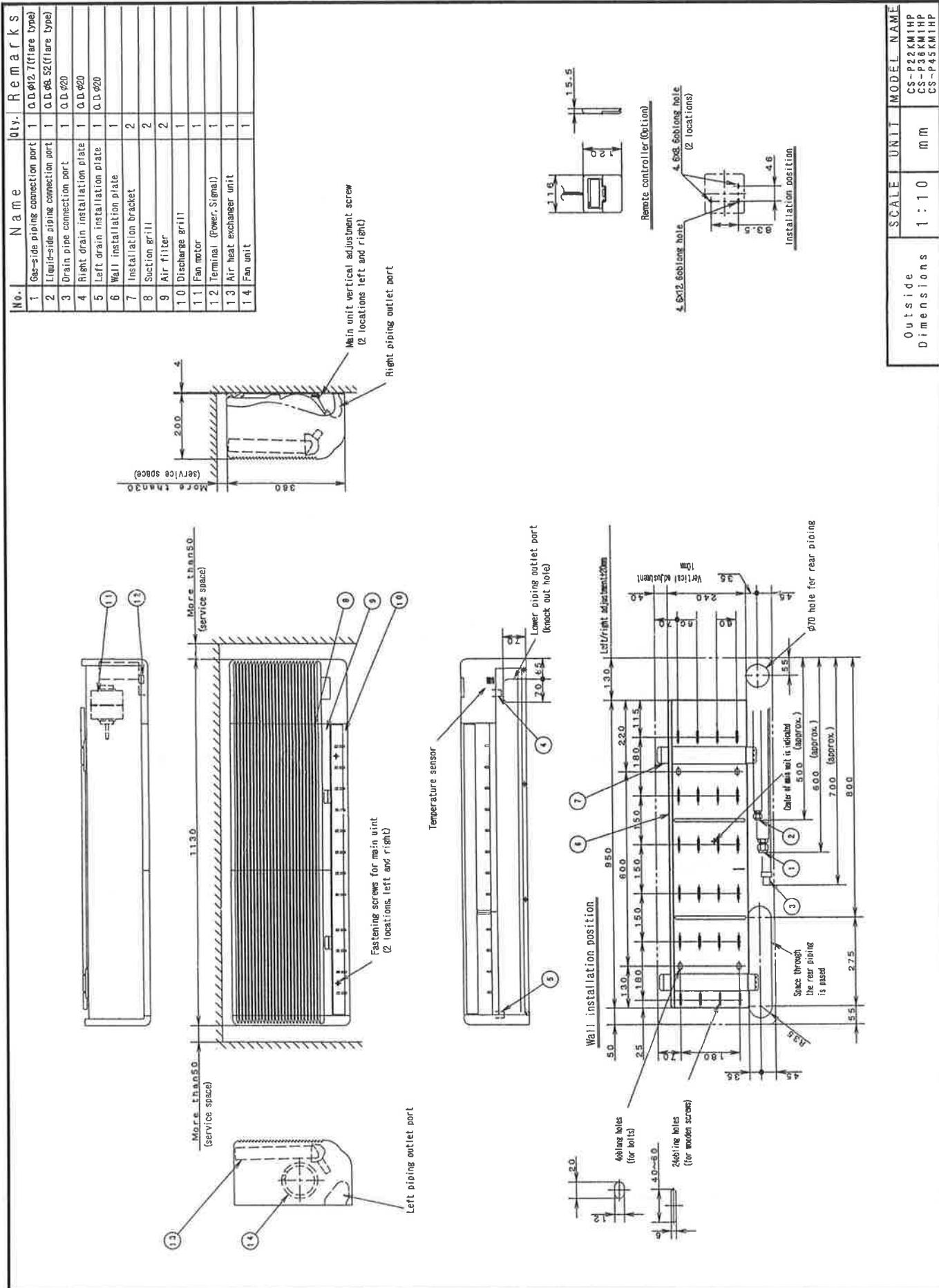
■ Heat pump type(CS-P112EH1HP,P140EM1HP)



4. INDOOR UNIT

Wall type

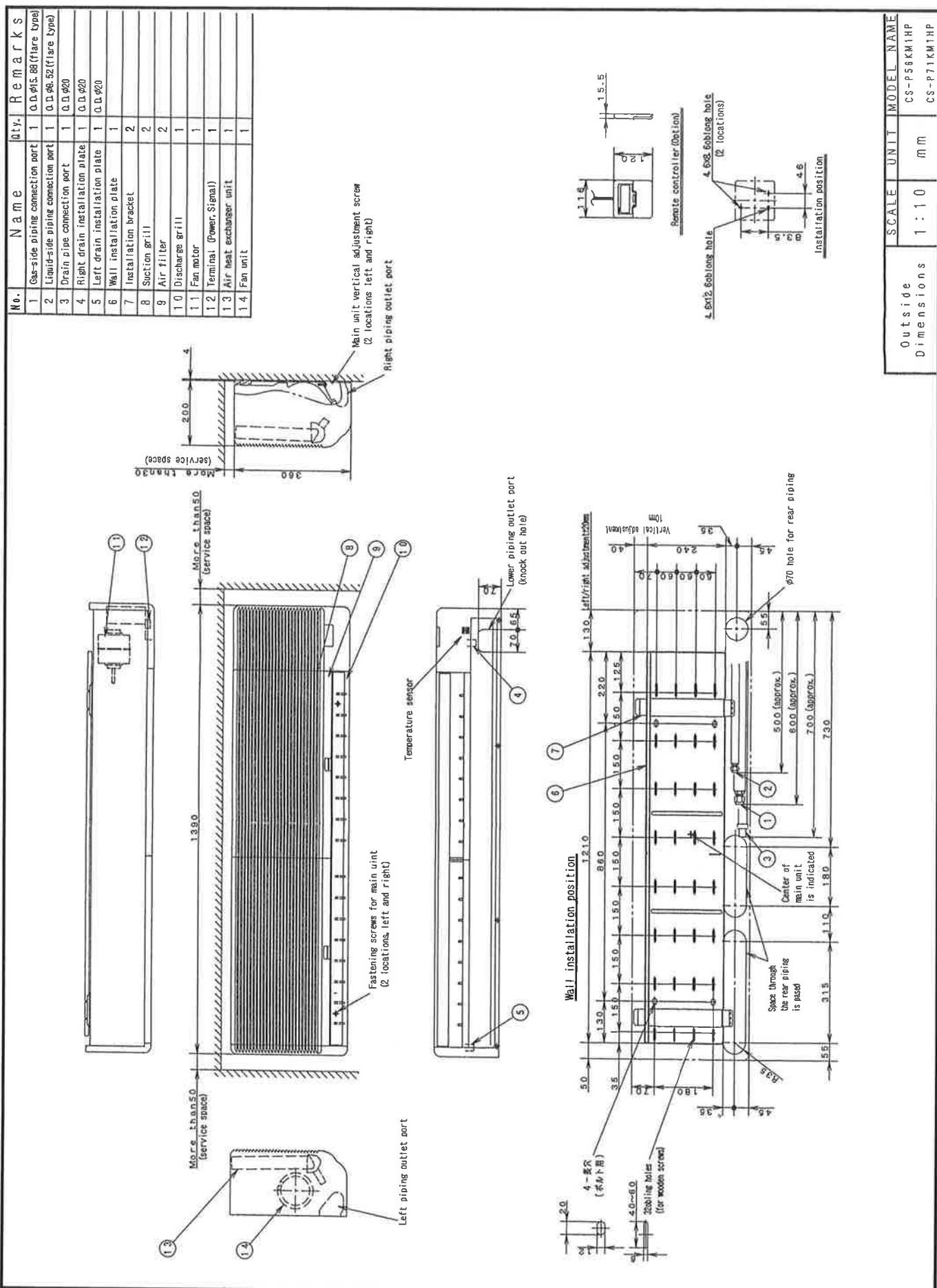
■ Heat pump type ··· CS-P22KM1HP, P36KM1HP, P45KM1HP



4. INDOOR UNIT

Wall type

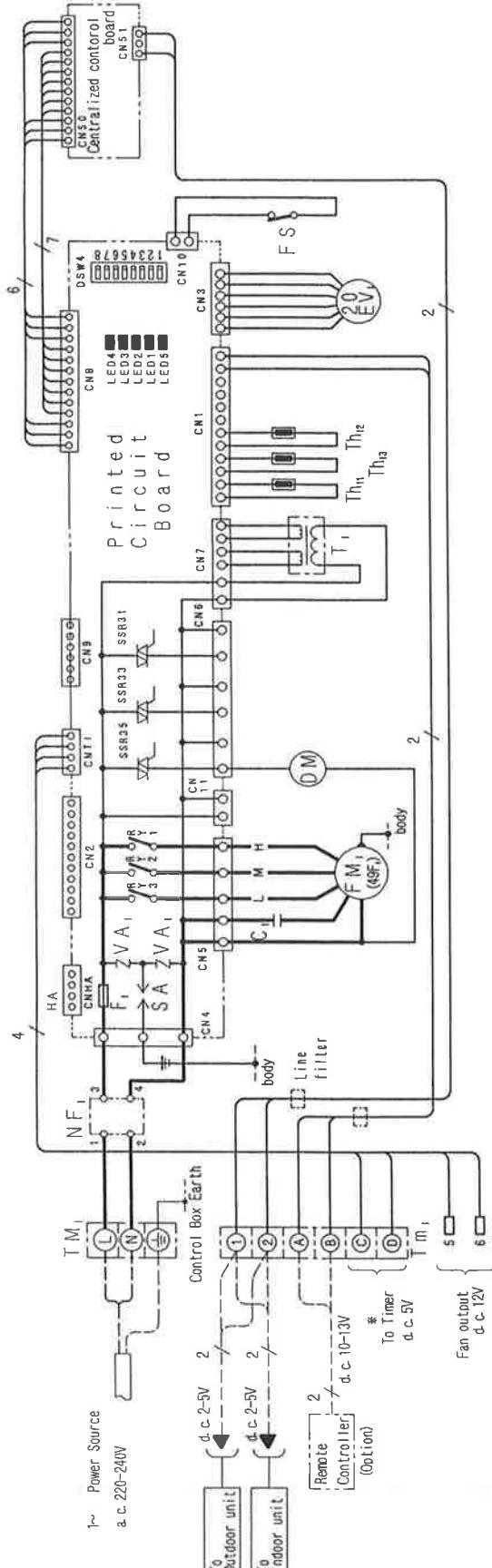
■ Heat pump type ··· CS-P56KM1HP, P71KM1HP



3. CIRCUIT DIAGRAM

One way cassette type

■ Heat pump type(CS-P28DM1HP)



RELAYS OPERATION

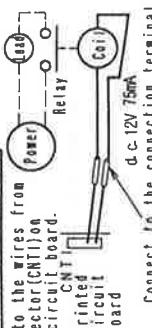
Relay	OPERATION (RELAY-ON)
Solid state relay	SSR31
SSR33	
SSR35	Drain-up Motor-ON
Power Relay	RY1 Indoor Fan Motor Speed (Hi Me Lo)
RY2	
RY3	

AS FOR TIMER AND FAN OUTPUT	
Timer setting	For use of a timer (locally supplied). Connect to the wires from the connector (CN1) on the printed circuit board.
Terminal board	Close: RUN Open: STOP d.c. 3V Connect to another circuit contact point of the timer.
Circuit board	Connect to the connection terminal d.c. 12V/75mA.

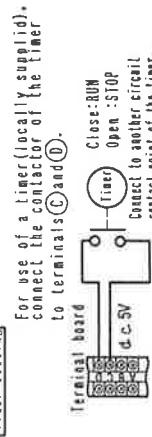
LEGEND

20EV	Expansion Valve	T _{h11}	Thermistor (Indoor Temperature)
49F	Internal Thermostat for FM.	T _{h12}	Thermistor (Indoor Heat Exchanger Entrance)
C	Capacitor for FM.	T _{h13}	Thermistor (Indoor Heat Exchanger Exit)
F	Fuse		
F.M.	Fan Motor (Indoor Unit)		
T	Transformer		
T.m.	Terminal Board for Control Circuit	S.S.R. ₁₋₃	Solid state relay for IC Control
T.M.	Terminal Board for Main Circuit	R.Y. ₁₋₃	Power relay for IC Control
N.F.	Noise Filter	V.A. ₁	Varistor
D.M.	Drain up Motor	S.A.	Surge absorber
F.S.	Float Switch (Line Cut)	C.N.	Connector

Fan output(Connect to white wire)



Timer setting



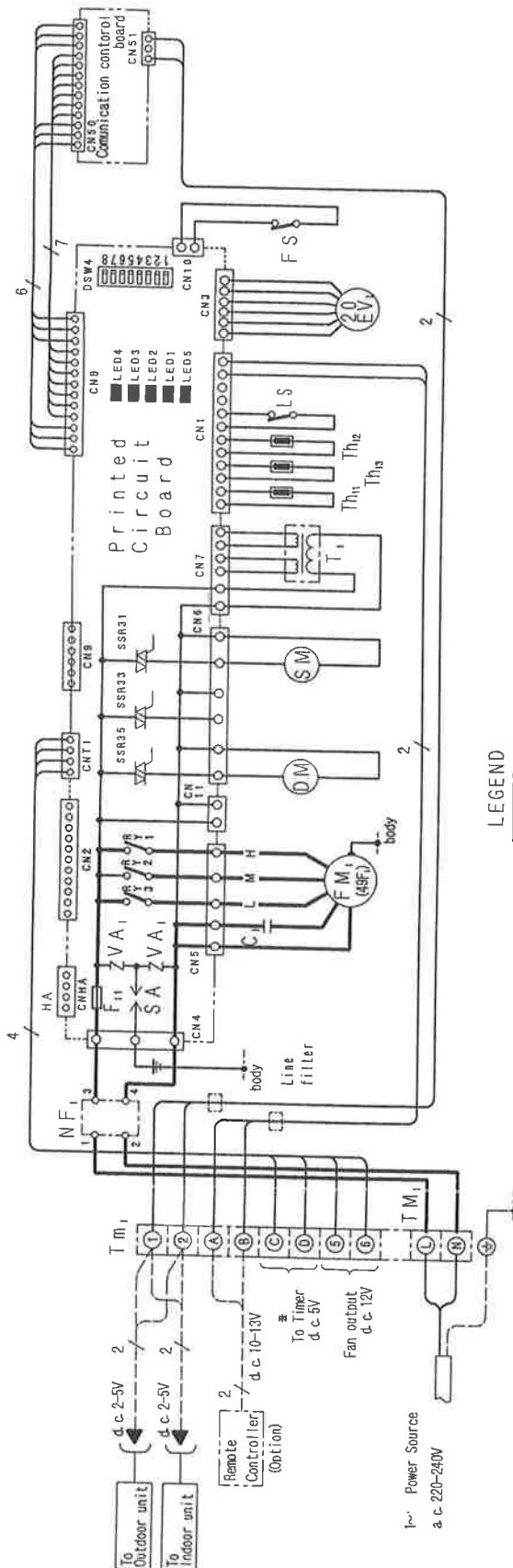
Electric Circuit Diagram	One Way cassette type	MODEL NAME
		CS-P28DM1HP

4. INDOOR UNIT

Four way cassette type

■ Heat pump type

CS-P36UM1HP, CS-P45UM1HP, CS-P56UM1HP, CS-P71UM1HP,
CS-P80UM1HP, CS-P112UM1HP, CS-P140UM1HP



LEGEND

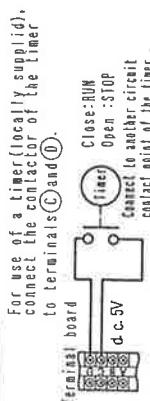
20 EV,	Expansion Valve	S.M.	Swing motor (for louver)
49 F,	Internal Thermostat for FM,	L.S.	Limit switch
C,	Capacitor for FM,	T h _{1,1}	Thermistor (Indoor Temperature)
F,	Fuse	T h _{1,2}	Thermistor (Indoor Heat Exchanger Entrance)
F.M.,	Fan Motor (Indoor Unit)	T h _{1,3}	Thermistor (Indoor Heat Exchanger Exit)
T,	Transformer		
T.m.,	Terminal Board for Control Circuit	S.S.R. 31-35	Solid state relay for IC Control
T.M.,	Terminal Board for Main Circuit	R.Y. 1-3	Power relay for IC Control
N.F.,	Noise Filter	V.A.,	Varistor
DM,	Drain up Motor	S.A.	Surge absorber
F.S.	Float Switch (Line Cut)	C.N.	Connector

RELAYS OPERATION

Relay	OPERATION (RELAY-ON)
Solid state relay	SSR31 Swing Motor (for louver)-ON
relay	SSR33 SSR35 Drain-up Motor-ON
Power Relay	RY1 Indoor Fan Motor Speed RY2 (Hi Me Lo) RY3

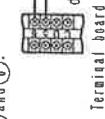
AS FOR TIMER AND FAN OUTPUT

Timer setting



Fan output

For use of a timer (locally supplied), connect the contactor of the timer to terminals C and ①.



Terminal board

d.c. 12V 75mA

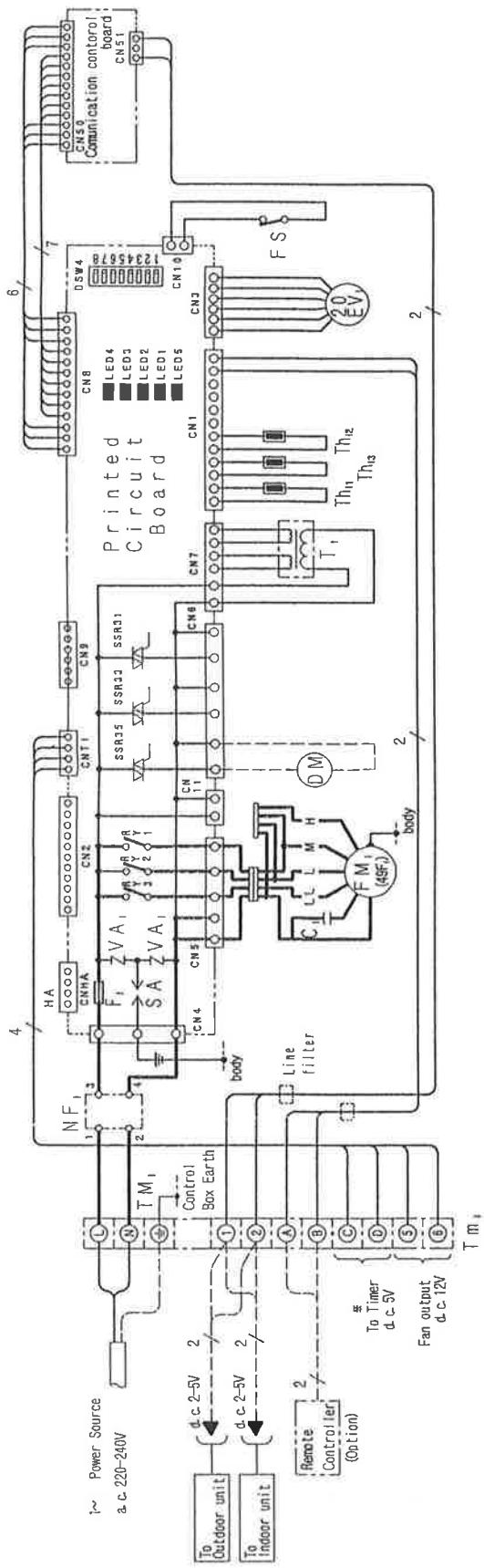
Electric Circuit Diagram	Four way cassette type	MODEL NAME
		CS-P**UM1HP

4. INDOOR UNIT

Hide-Away type

■ Heat pump type

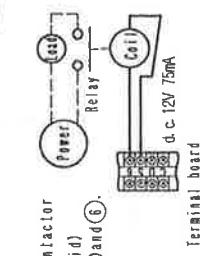
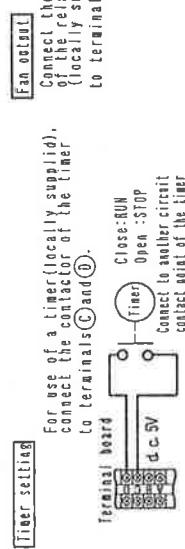
CS-P45EM1HP, CS-P56EM1HP, CS-P71EM1HP, CS-P80EM1HP,
CS-P112EM1HP, CS-P140EM1HP



RELAYS OPERATION

OPERATION (RELAY-ON)	
Solid state relay	SSR31
SSR33	
SSR35	Drain-up Motor-ON(option)
Power Relay	R Y1
R Y2	Indoor Fan Motor Speed (Hi Me Lo)
R Y3	

AS FOR TIMER AND FAN OUTPUT



LEGEND	
20 EV	Expansion Valve
49 F	Internal Thermostat for FM
C	Capacitor for FM
F	Fuse
FM	Fan Motor (Indoor Unit)
T	Transformer
Tm	Terminal Board for Control Circuit
TM	Terminal Board for Main Circuit
NF	Noise Filter
DM	Drain up Motor(option)
FS	Float Switch(Line Cut)

DSW4	LED4 LED3 LED2 LED1
CN8	Th1, Thermistor (Indoor Temperature)
CN9	Th2, Thermistor (Indoor Heat Exchanger Entrance)
CN10	Th3, Thermistor (Indoor Heat Exchanger Exit)
CN1	LED5
CN7	T1
CN6	Thn, Thz
CN5	FM (45Fr.)
CN4	Line filter
CN3	V A1, V A1
CN2	ENHA
CN1	H A
CN51	CNS9 Communication control board
CN51	12345678

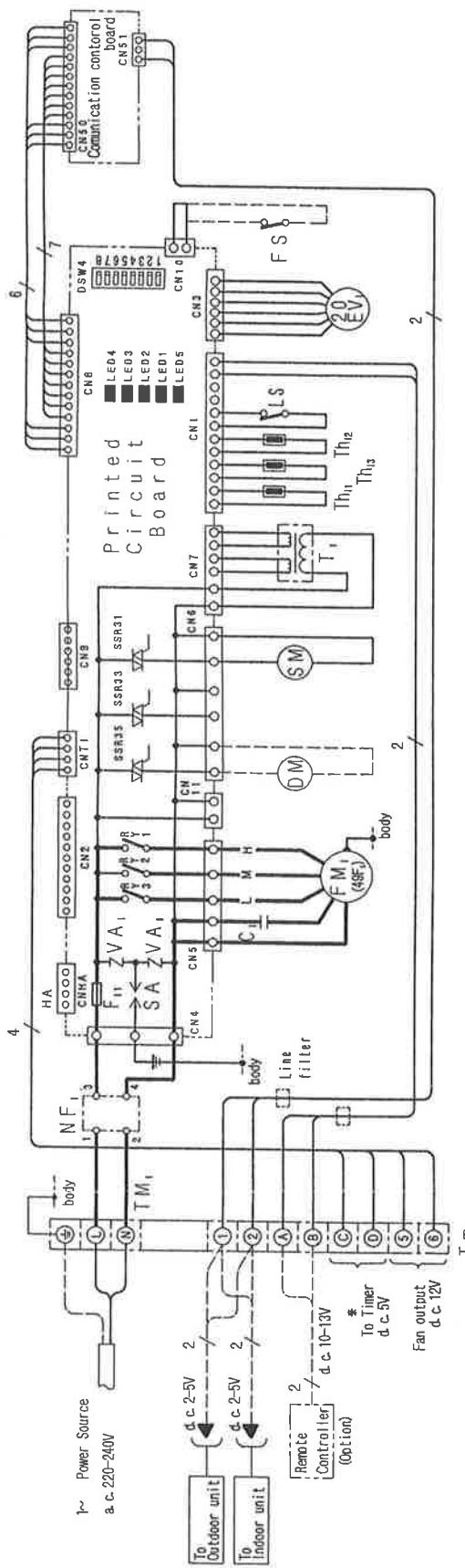
Electric Circuit Diagram	Hide-away type	MODEL NAME
		CS-P***EM1HP

4. INDOOR UNIT

Wall type

■ Heat pump type

CS-P22KM1HP, CS-P36KM1HP,
CS-P45KM1HP, CS-P56KM1HP, CS-P71KM1HP

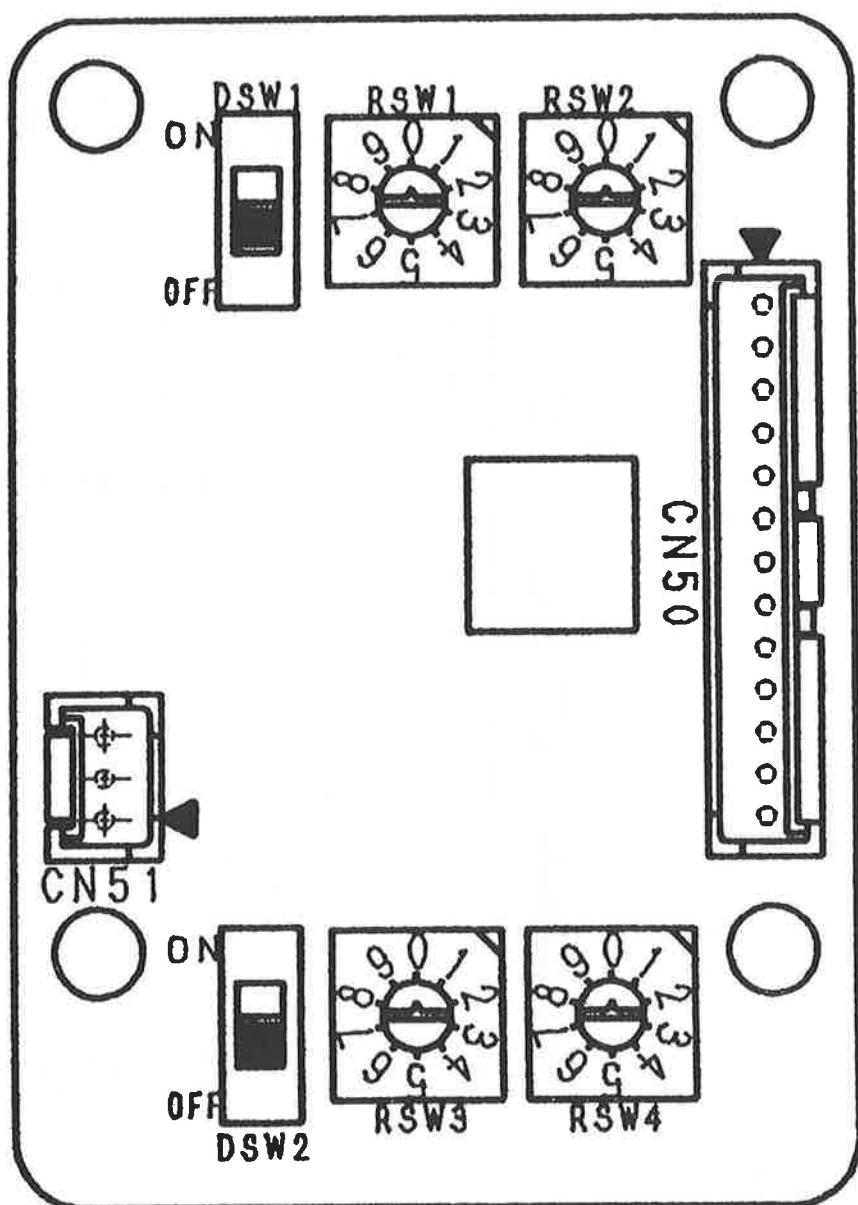


20 E.V.	Expansion Valve	S M	Swing motor (for louver)
49 F.	Internal Thermostat for FM ₁	L S	Limit switch
C.	Capacitor for FM ₁	T H ₁₁	Thermistor (Indoor Temperature)
F.	Fuse	T H ₁₂	Thermistor (Indoor Heat Exchanger Entrance)
F.M.	Fan Motor (Indoor Unit)	T H ₁₃	Thermistor (Indoor Heat Exchanger Exit)
T.	Transformer		Printed Circuit Board
T.M.	Terminal Board for Control Circuit	S S R _{31~33}	Solid state relay for IC Control
N.F.	Terminal Board for Main Circuit	R Y _{1~3}	Power relay for IC Control
	Noise Filter	V A ₁	Varistor
	Drain up Motor	S A	Surge absorber
	F.S.	C N	Connector

Electric Circuit Diagram	Wall type	MODEL NAME
		CS-P**KM1HP

5 PRINTED CIRCUIT BOARD OF INDOOR UNIT**CIRCUIT DIAGRAM****■APPLICABLE MODEL****ALL MODEL**

- INDOOR UNIT

PRINTED CIRCUIT BOARD

CN50	INDOOR PRINTED CIRCUIT BOARD CONNECTION
------	--------------------------------------------

CN51	"URBAN-NET" CONNECTION
------	---------------------------

5. PRINTED CIRCUIT BOARD OF INDOOR UNIT

CIRCUIT DIAGRAM

■ APPLICABLE MODEL

ALL MODEL

● INDOOR UNIT

PRINTED CIRCUIT BOARD

S PHASE	4	CN4
SURGE ABSORBER	3	
	2	
R PHASE	1	

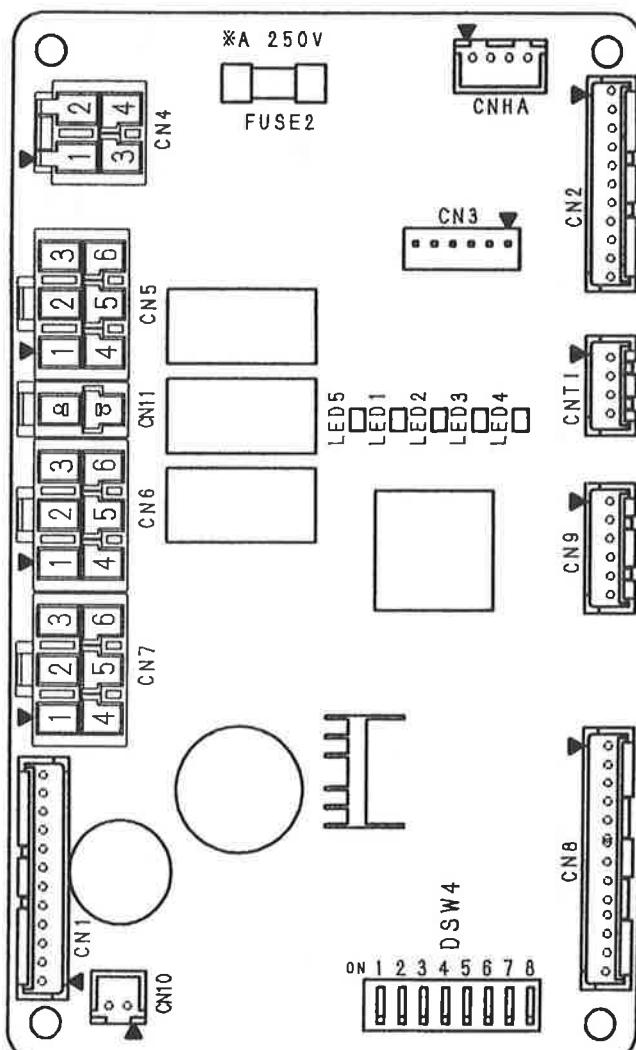
Option board connection(S PH)	2	CN5
Option board connection(R PH)	1	

INDOOR FAN L	6	CN5
INDOOR FAN M	5	
INDOOR FAN H	4	
	3	
COM	2	
COM	1	

LOUVER MOTOR	6	CN6
HEATER	5	
DRAIN PUMP	4	
COM (S PH)	3	
COM (S PH)	2	
COM (S PH)	1	

TRANSFORMER 1ST (R PH)	6	CN7
TRANSFORMER 2ND	5	
TRANSFORMER 2ND	4	
TRANSFORMER 1ST (S PH)	3	
TRANSFORMER 2ND	2	
TRANSFORMER 2ND	1	

ROOM THERMISTOR	12	CN1
ROOM THERMISTOR	11	
PIPE THERMISTOR	10	
PIPE THERMISTOR	9	
	8	
	7	
LOUVER SW	6	
LOUVER SW	5	
COMMUNICATION WITH OUTDOOR UNIT	4	
COMMUNICATION WITH OUTDOOR UNIT	3	
WIRED REMOTE CONTROLLER	2	
WIRED REMOTE CONTROLLER	1	



CN10	2	1	CENTRAL CONTROL BOARD CONNECTION
FLOAT	FLOAT		
CN11	S	W	OPTIONAL BOARD CONNECTION
SW	SW		
CNT1	4	TIMER INPUT(GND)(Non Voltage A contact)	OPTIONAL BOARD CONNECTION
	3	TIMER INPUT(Non Voltage A contact)	
	2	FAN OUTPUT(DC12V,Max 0.9W)	OPTIONAL BOARD CONNECTION
	1	FAN OUTPUT	

6 CONTROL SYSTEM

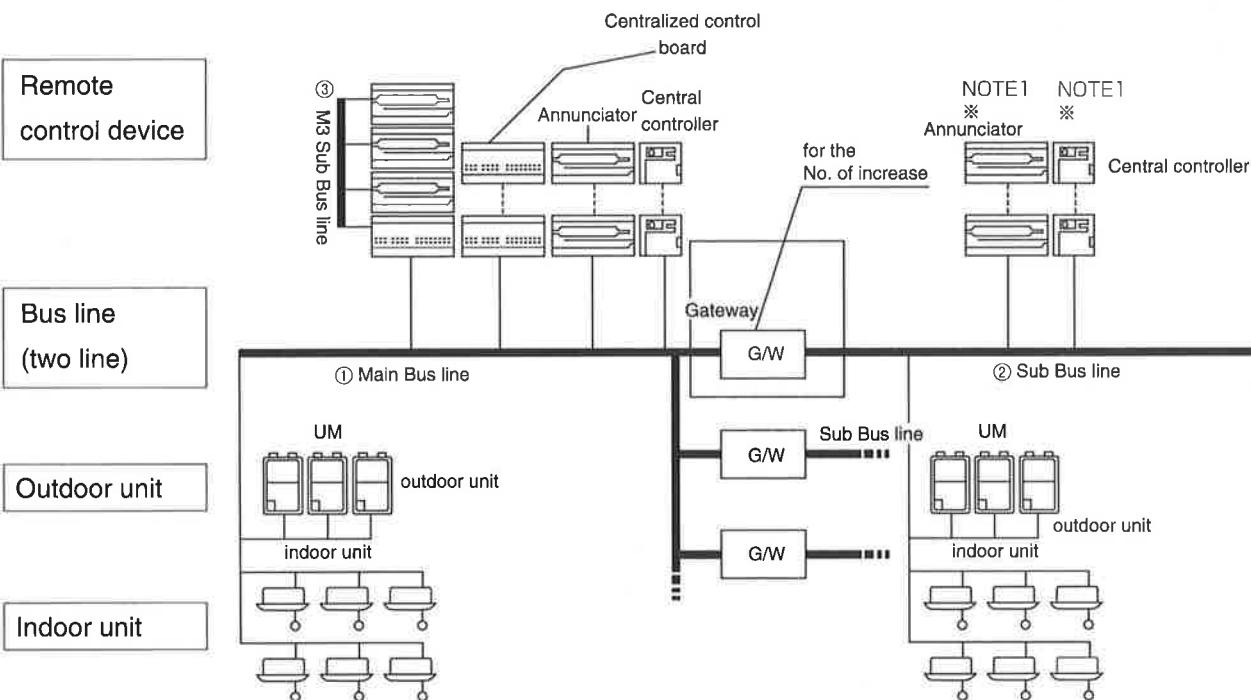
1. URBAN-NET method of Bus line

■ Bus line

URBAN-NET communicate mutually the indoor, outdoor unit and each control device which is connecting to Bus line.

*The control voltage of Main Bus line and Sub Bus line is DC24V (feeding power is necessary)

*Please do not use a loop wiring on terminal or etc. for Bus line method.



NOTES

1. The annunciator and central controller which connected to Sub Bus line (*) cannot control the indoor unit, which connected to Main Bus line.
2. The indoor, outdoor unit which is in one system of same refrigerant pipe, please do not connect separately for Main Bus line and Sub Bus line.
3. If connect the 10 or more number of central controller, increase the number of G/W and compose a Sub Bus line.
4. The indoor, outdoor unit and each control device are necessary the address setting for the communication for both parties. Address number have to set on the network sequentially and please do not overlap.
5. Remote control device which can be controlled one indoor unit is up to two. (However, Remote control unit (Annunciator CZ-EAN) connected to M3 Sub Bus line does not contain.)

■ Kind of Bus line

- ① MAIN BUS LINE— A basic Bus line which connect the system device (indoor, outdoor unit and each control system) up to 128 and control.
- ② SUB BUS LINE— A Bus line which be composed by a gateway (CZ-01EAN) when the number of the system device exceeded 128 on the main Bus line.
- ③ M3 SUB BUS LINE— Exclusive Bus line between the control system which connect some annunciator (CZ-EAN) with centralized a control board(CZ-ESM).

■ Detailed specification of each bus line

Transmission Bus line length

Transmission length of bus line (cable length)	Max.1,000m	Total wiring length to the connected equi devices of sub-Bus line and Main Bus line
Transmission length of M3 sub-bus line (cable length)	Max.200m	Total wiring length to the connected device

	①Main bus line	②M3 sub-Bus line	③Sub-Bus line
Numbers of device which can be connected	128 units ☆		128 units ☆
Connected device	UM indoor unit	○	○
	UM outdoor unit	○	○*
	Centralized control board (CZ-ESM)	○*	
	Annunciator (CZ-EAN)	○	○
	Central controller (CZ-ESS)	○	○
	Gate way (CZ-01GWM)	○*	*
Polarity of bus line	No polarity	Polarity(+,-)	No polarity

Remarks (1) ○: Connectable models

(3) ☆: The number of CZ-EAN which are connected to M3 Sub Bus Line is not counted in the number of 128 units

(2) * : Power-feeder equipment

■ Power feeding to the Bus line (supply for control circuit: DC 24V)

In case that the main Bus line or the main Bus line + sub-Bus line are composed, the voltage supply is needed from the device specified without fail by the content of the system configuration to each bus line. Please do the feeding power setting in the local.

■ The roll of the gate way for expansion (CZ-01GWM)

- ① For expansion of the number of the units: It expands the numbers of the units, and compose the sub-Bus line.
- ② For the power feeding: In case that the connection number of the central controller (CZ-ESS) is three or more, the Gate way can be used for the power feeding device. (It is only possible to feed the power to either Main Bus line or Sub-Bus line. It is not possible to feed both of them simultaneously.)

■ Wiring for control

① Bus line wire

- For the wiring between indoor units and outdoor unit and between the each control devices, please use without shielded a instrument cable (twisted 2-wire cable (0.75mm²~1.0mm²)).
- Example KPEV or KPEE (without sealed) for instrument cable : 1 pair (2 wires) • 0.75m²

② The remote controller wire

Please use the sheathed vinyl cord or the cable of 0.5-2.0mm² as the following specification.

vinyl cabtyre round cord	VCTF JISC3306
vinyl cabtyre oval cord	VCTFK JISC3306
vinyl insulated vinyl sheathed cable for control	CVV JISC3401
vinyl insulated vinyl sheathed cable for control	CVS JISC3401
round type vinyl insulated vinyl sheathed cable (600V)	VVR JISC3342
flat type vinyl insulated vinyl sheathed cable (600V)	VVF JISC3342
vinyl insulated vinyl cabtyre cable (600V)	VVT JISC3312

Remarks: In order to avoid malfunction, please install the power supply line, Bus line wiring, and the remote controller wiring separately (30cm or more)

2.Basic design specifications

- The URBAN-NET control system can control and connect centralized control boards, annunciators, and central controllers to anywhere on the bus line.
- Please observe the following limitations relating to the bus line length and the number of connected the control devices when designing the wiring system.

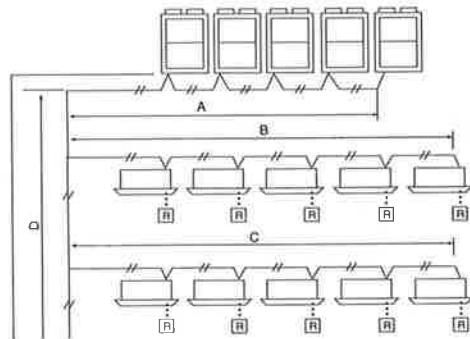
(1) Bus line cable length

Centralized control board~Indoor units~Outdoor units

The total wiring length is up to 1000 m (main bus line + sub bus line)

Calculation example: A + B + C + D +

The total wiring length are less than or equal to 1000m.



(2) Number of units connected to the bus line

Up to total 256 units of indoor units, outdoor units, and controllers (centralized control board, annunciator etc.) can be connected to one bus line system (main bus line/sub bus line). (main bus line + sub bus line \leq 256 units)

Connected units on the bus line

control unit	Indoor Outdoor	CZ-ESS	CZ-EAN	CZ-ESM
Bus line				
Main bus line	●	●	●	●
Sub bus line	●	●	●	
M3 sub bus line			●	

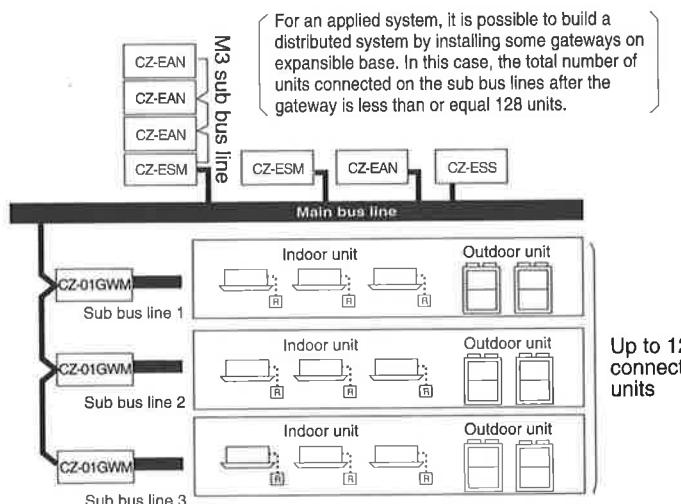
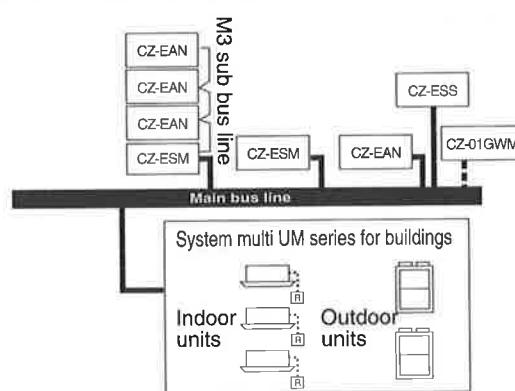
* The M3 sub bus line is a specialized bus line from the centralized control board to the control devices.

Mid-size and small buildings Network system
When 128 or fewer units are connected, the system construction is one main bus line.

Mid-size and large buildings Network system
When 256 or fewer units are connected, the system construction is one main bus line and some sub bus lines.

- When building a distributed system, it is possible to use an expansion gateway, and connect indoor and outdoor units on the sub bus line.
- It is possible to control indoor and outdoor units on the sub bus line by using the control units on the main bus line.

An applied control system construction example



Note: The number of units connected to each sub bus line after the expansion gateway must be 128 or less.

*You cannot connect one more CZ-01GWM again to a sub bus line.

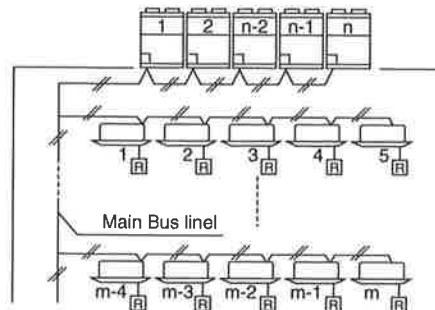
Calculation example (a)

When connect only indoor and outdoor unit

*Indoor unit "m"

*Outdoor unit "n"

$$m(\text{Indoor unit}) + n(\text{Outdoor unit}) \leq 128$$

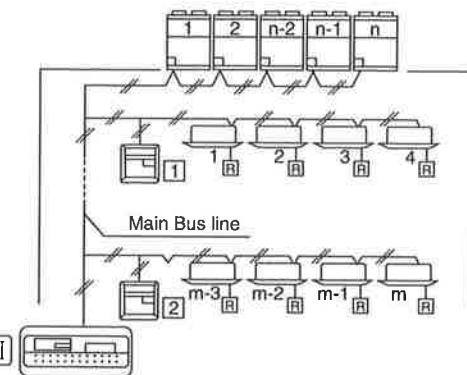


Calculation example (b)

When connect Indoor unit+Outdoor unit+Central controller×2

+Centralized control board × 1 is:

$$m(\text{Indoor unit}) + n(\text{Outdoor unit}) + \text{Central controller} \times 2 + \text{Centralized control board} \times 1 \leq 128$$



Calculation example (c)

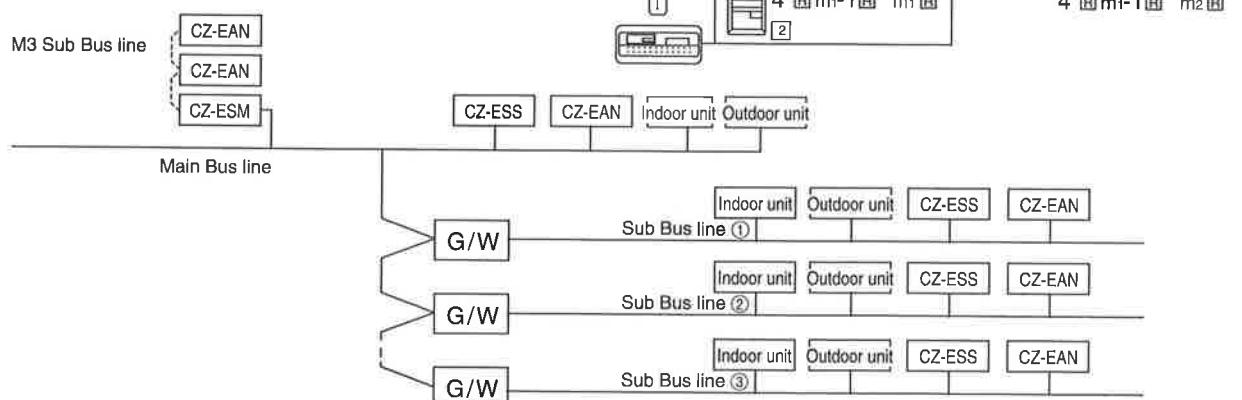
When connect Indoor unit+Outdoor unit

+Central controller×3+Centralized control board × 1+Gateway is:

Main Bus line

$$m_1(\text{Indoor unit}) + n_1(\text{Outdoor unit}) + \text{Central controller} \times 2 + \text{Centralized control board} \times 1 + \text{Gateway} \leq 128$$

$$m_2(\text{Indoor unit}) + n_2(\text{Outdoor unit}) + \text{Central controller} \times 1 + \text{Gateway} \leq 128$$



1 network (1 Bus line)		
Number of units which can be connect	256	Main Bus line:128
		Sub Bus line:128 (Sub Bus line①+Sub Bus line②+...+Sub Bus line③)
Number of indoor unit which can be connect	200	

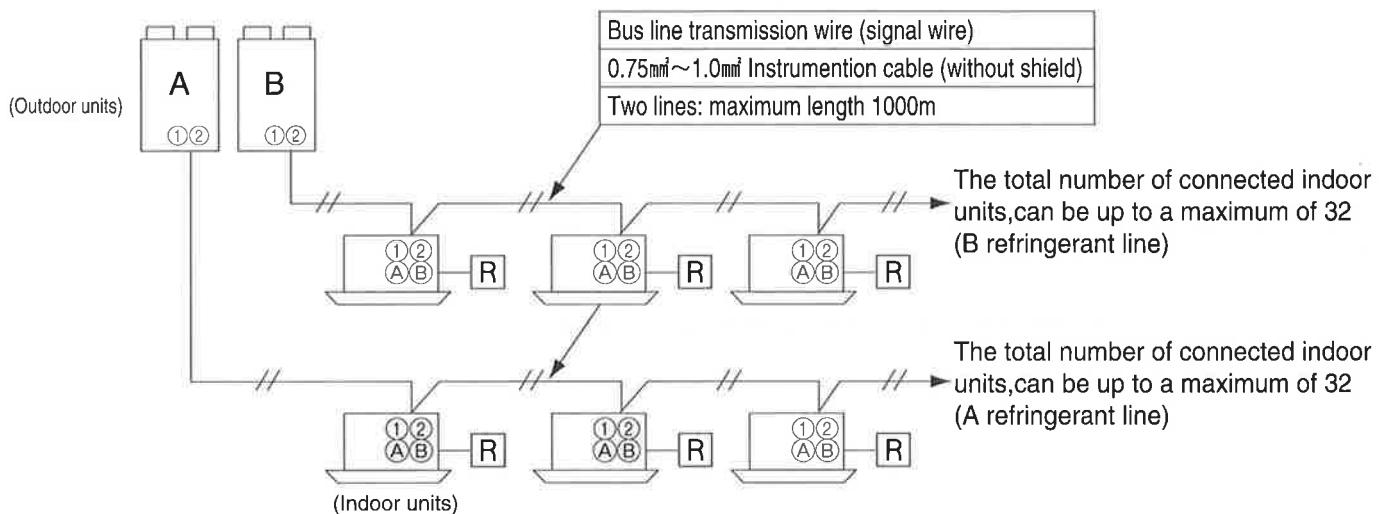
NOTE

1) It is not possible to install CZ-01 GWM again on Sub Bus line.

3.CONTROL WIRING OUTLINE

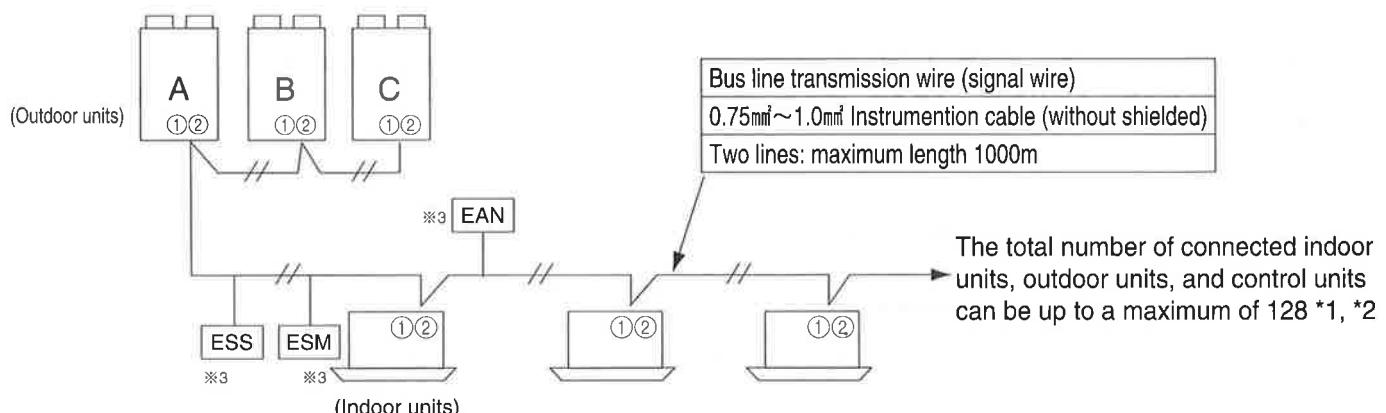
The URBAN-NET control wiring method and Refrigerant piping pair method are used for UM control wiring.

① Refrigerant piping pair method



② The URBAN-NET method (new control way)

- Up to 128 connected units

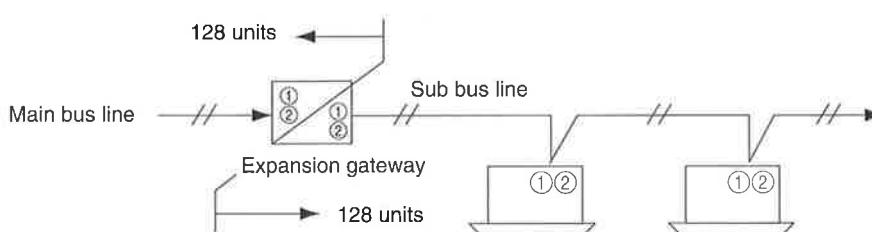


*1 It is possible to ignore the refrigerant piping system when connecting the control wiring.

*2 In case of connecting 129 or more units, it is necessary to use the CZ-01GWM (sold separately) expansion gateway (refer to the figure below).

*3 Control units are also counted the control device (CZ-ESS, CZ-EAN and CZ-ESM), but local remote controllers are not included.

- To connect 129 or more units



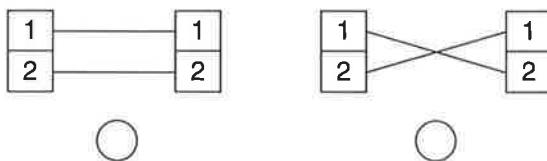
Note: Main bus + sub bus ≤ 256

Up to total 128 units of the indoor units, outdoor units, expansion gateway, and control devices can be connected to the sub bus line. Note, however, that 256 units can be connected to the main bus + sub bus.

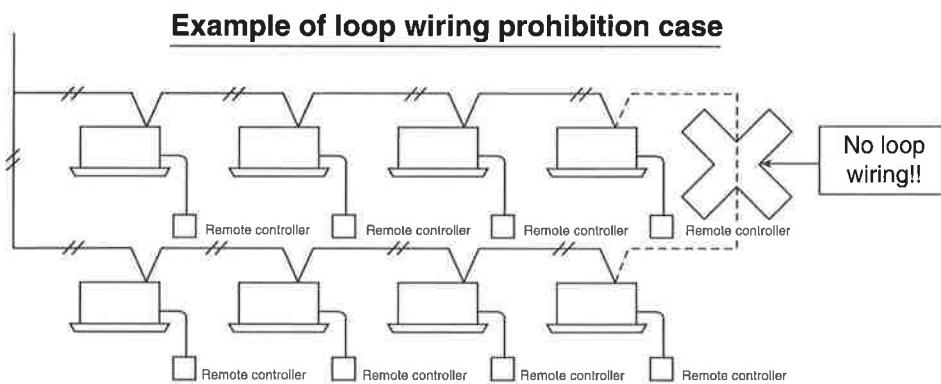
When using a sub bus line, the total wiring distance for the main bus line + sub bus line is 1000m or less.

NOTE

(1) Bus line wire (Main bus line · Sub bus line) is 2 wire type without polarity.



(2) Bus line have to enforce no loop wiring as much as one point either.
(PCB might be damaged)



(3) For Bus line, have to use **the specified instrumentation cable (twist pair cable) without shielded**

For new control system URBAN-NET Bus line, have to use following maker's cable or same designed instrumentation cable.

Maker	Instrumentation cable	
Nihon electric wire	KNPEV-R or KNPEE-R	0.75mm ² ~1.0mm ² pair (2 wires) (without shielded)※1

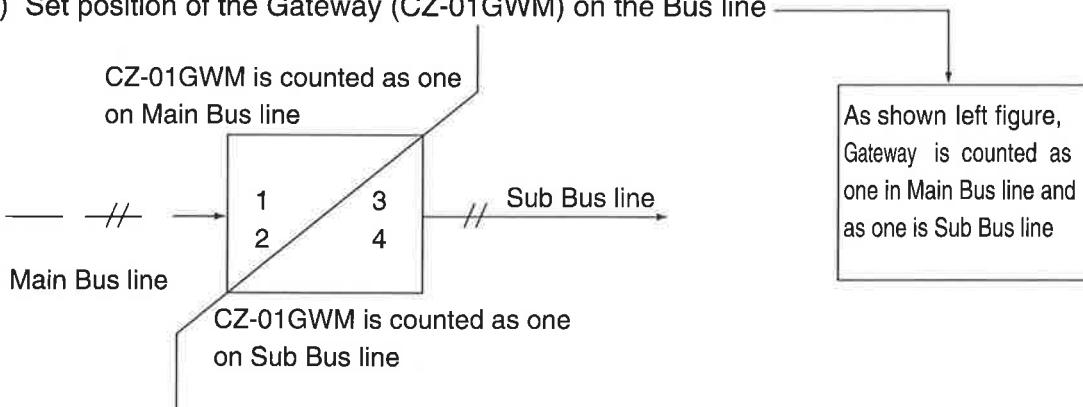
※1 The use of cable with shield is a strict prohibition.

Conductor size: 0.75mm²-1.0mm²
pair number: 1 pair (2 wires)
Insulator Material: polyethylene

Shield No [strict prohibition]
Electric characteristic status Resistnace: within 27Ω /km
static capacity: within 60nF/km

NOTE: You can order the instrumentation cable to PACD (Packaged Air-Conditioner Div.) Refer to Page 154.

(4) Set position of the Gateway (CZ-01GWM) on the Bus line



4. POWER SUPPLY (DC24V) TO THE CONTROL LINE (BUS LINE)

For Bus line , power supply (DC24V) is necessary.

The device which can supply DC24V are 3 types:

UM Outdoor unit

Centralized control board (CZ-ESM)

Gateway (CZ-01GWM)

Power supply unit is selected according to the install place, and please set to supply the power(DC24V)

Point of the power supply device selection

The point of power supply device selection is number of central controller which connect on the Bus line.

■Number of central controller which can be connect when set up power supply

Power supply device	Number of the central controller Which can be connect
UM Outdoor unit	0 to 2
Centralized control board (CZ-ESM)	0 to 5
Gateway for the no. increase (CZ-01GWM)	0 to 10

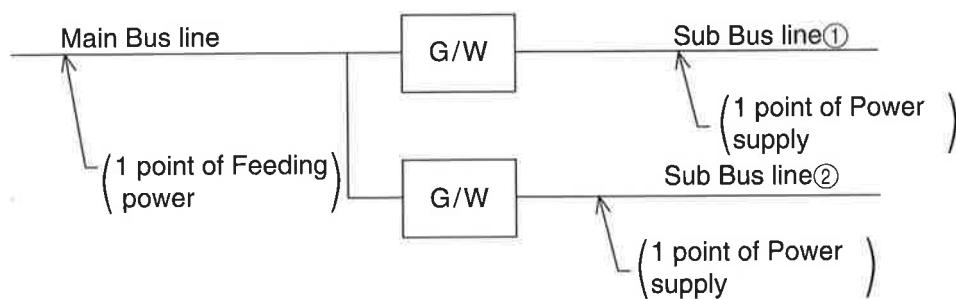
Notes

(1) Even when central controller is not connected, power supply is necessary.

(2) Power supply set device have to do the power supplying set up only one point respectively on Main Bus line, Sub Bus line①,
Sub Bus line②

If set up the power supply or more two, power supply device will be damage.

(3) When no power supply, URBAN-NET system do not operate normally.

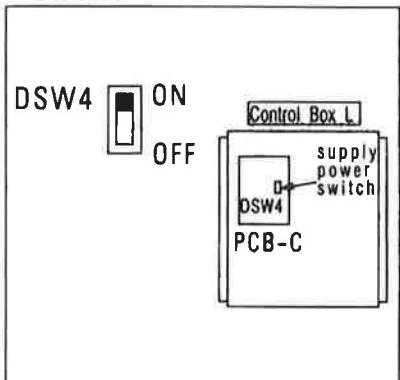


① Points regarding setting of power supplies for the main and sub bus lines

(1) Setting power supply from an outdoor unit

Factory setting: no power supply

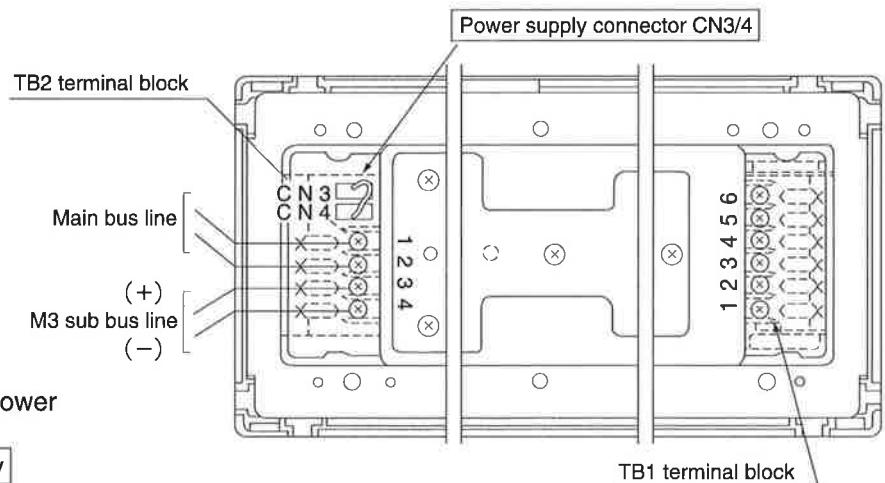
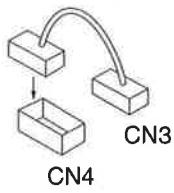
•UMXR



Set the power supply switch "ON", for control printed circuit board for DSW4 on the first outdoor unit only.

(2) Setting power supply from a centralized control board (CZ-ESM)

Insert the CN4 connector on the side of the TB2 terminal block of the centralized control board.

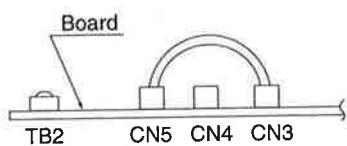


Connect CN3 to CN4 to supply power

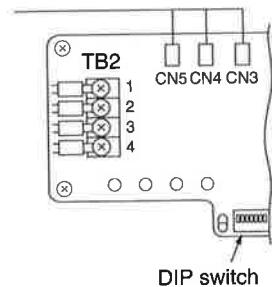
Factory setting: no power supply

(3) **Gateway (CZ-01GWM)**

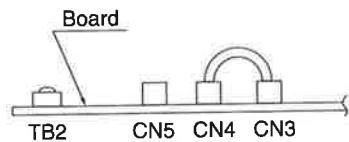
① Case of supplying power to the main bus line → Connect CN3 and CN5 on the board.



Power supply connector CN5 · 4 · 3



② Case of supplying power to the sub bus line → Connect CN3 and CN4 on the board.



Factory setting: no power supply

Notes:

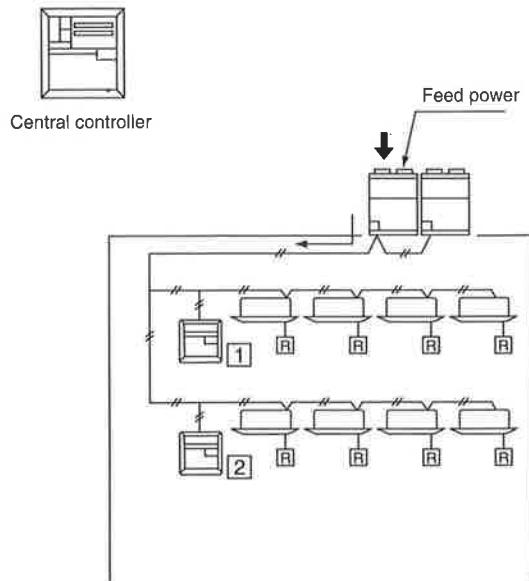
- (1) Supply power from one location only. If two or more units are set to supply power to the same bus line, the printed board will be broken.
- (2) When connecting a gateway unit to supply power only, DIP switch 8 must be switched on.
- (3) Factory settings: no power supply (connectors not plugged in).
- (4) Even if there are no central controllers (CZ-ESS), a power supply device must be set (same applies for auto address setting).

Examples of Feeding power set up (DC24V supply to Bus line)

Selection of the feeding power device to Bus line

① When feed power from Outdoor unit

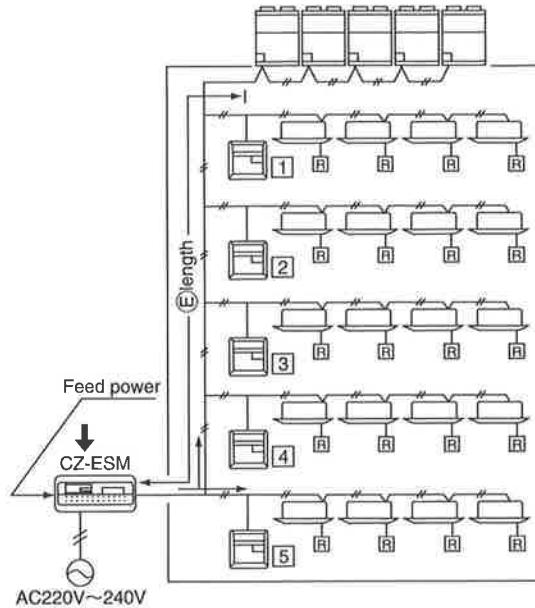
*Can feed power to the central controller[CZ-ESS] up to 2.



*Please set feed power even when do not use a Central controller.

② When feed power from centralized control board [CZ-ESM]

*Can feed power to the central controller up to 5.

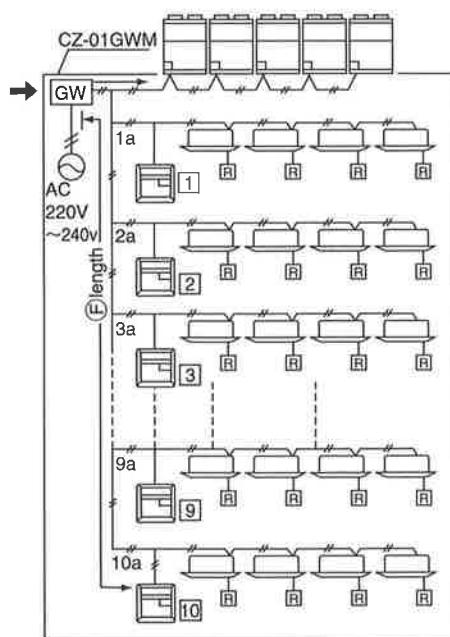


*If feed power with Centralized control board, have to install the central controller within 500m (length(E)) from the centralized control board.

③ When feed power from Gateway [CZ-01GWM]

*Can feed power the central controller up to 10.

As figure below, when use the Gateway only for the feed power unit, please switch on the Pin No.8 of Gateway.

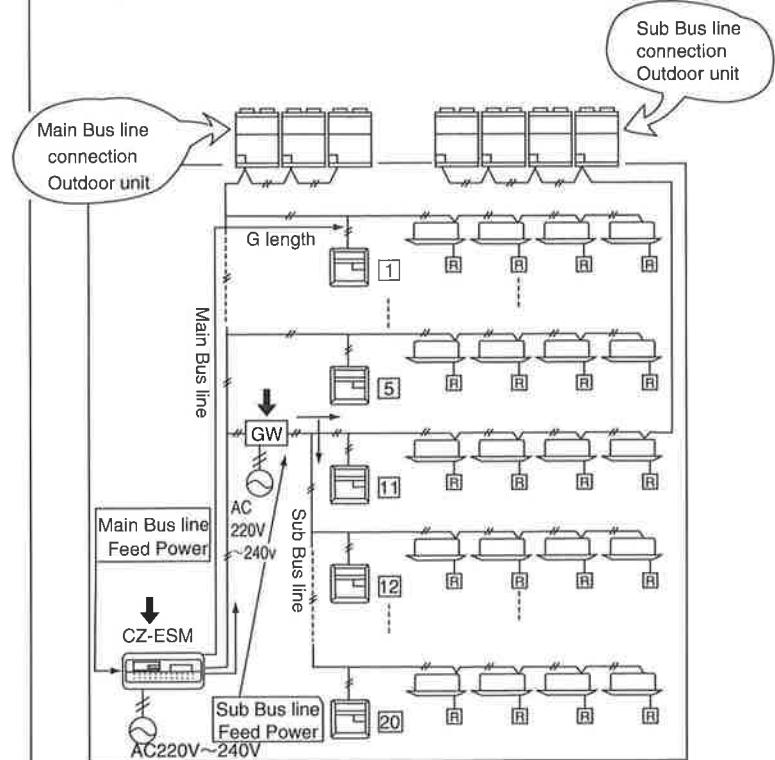


*If feed power with Gateway, have to install the central controller within 300m (length(F)) from Gateway.

④ When complex control

*Central controller 1-5...feed power from centralized control board.[CZ-ESM]

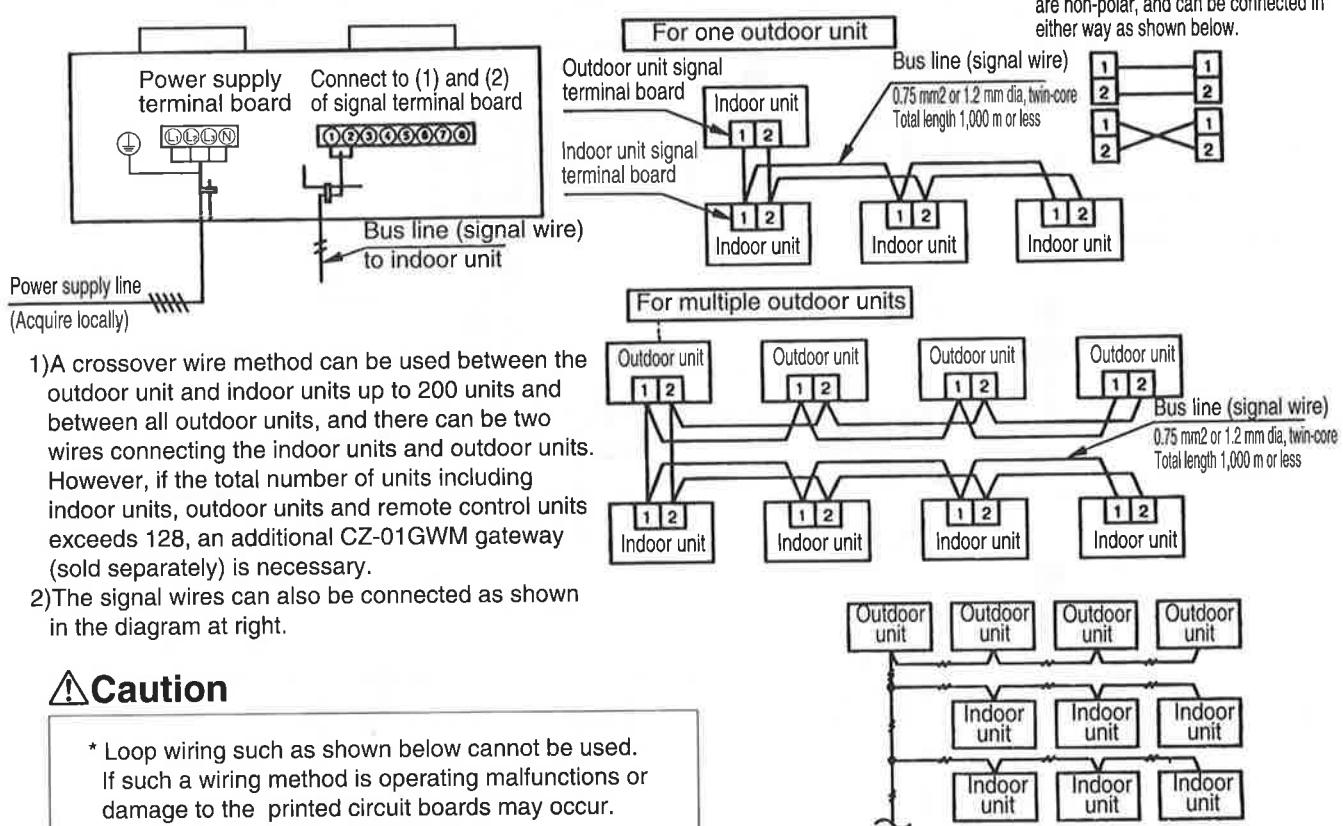
*Central controller 11-20...feed power from Gateway[CZ-01GWM]



*Length(G) is within 500m same as above (b).

5.CONNECTING OF THE ELECTRICAL WIRE

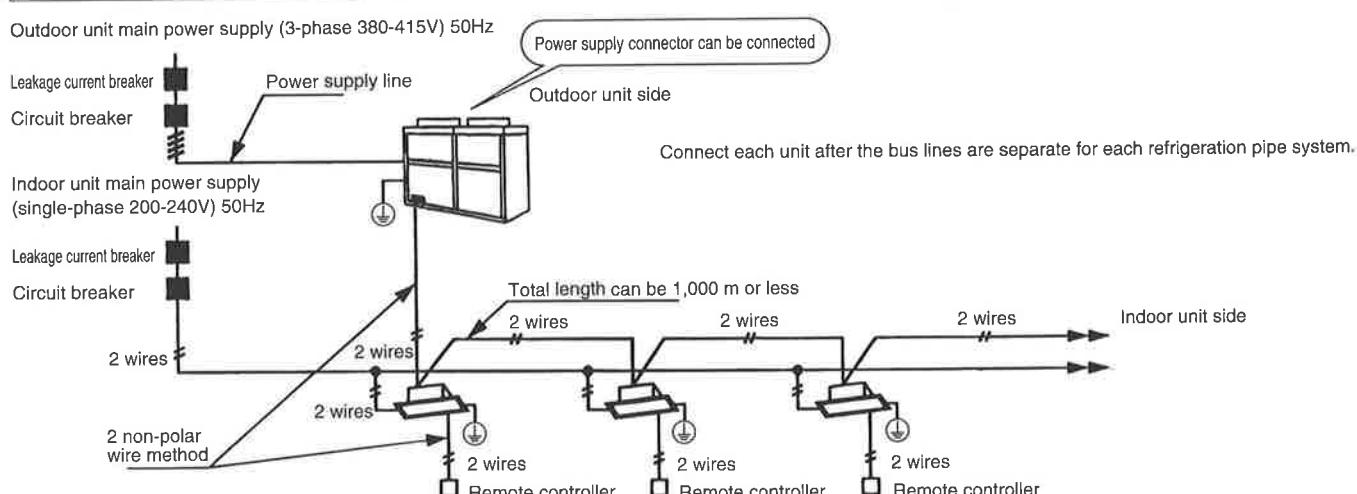
(1)Power supply (power line) and bus line transmission wire (signal wire) connection procedure



Wiring example: Either of the following two methods can be used to connect the signal wires.

(2)POWER SUPPLY AND URBAN NET WIRING

"Refrigerant pipe pair" method

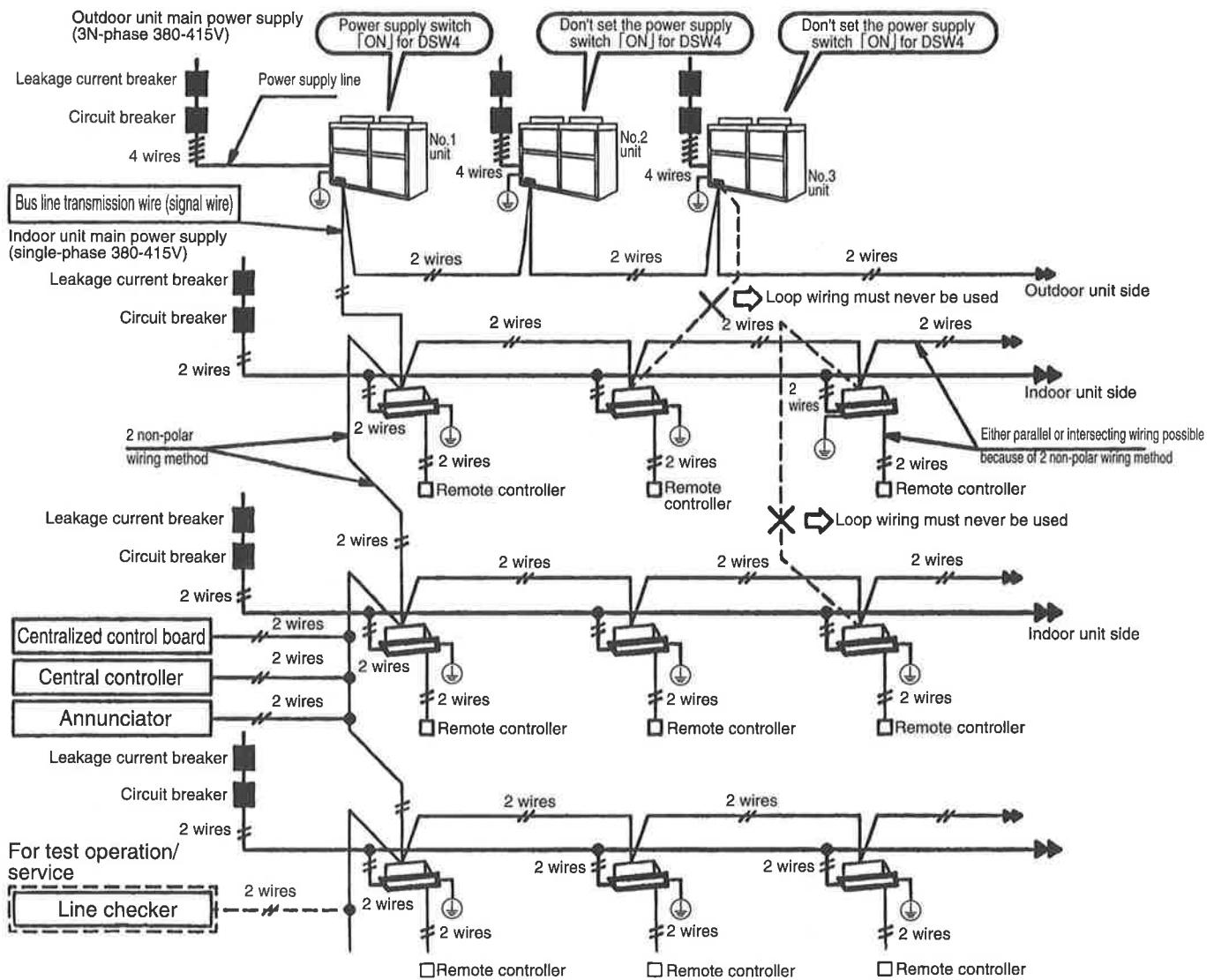


Caution

In order to ensure correct operation, set the supply power switch 「ON」 for control printed circuit board for DSW4.

URBAN-NET method

Connect all units to a single bus line, regardless of the refrigeration pipe system.

**Caution**

In order to ensure correct operation, set the supply power switch [ON] for control printed circuit board for DSW4. Supply power from one location only. If two or more units are set to supply power to the same bus line, the printed board will be broken.

6.DIP SWITCH SETTING

① Checking the indoor unit and outdoor unit DIP switches

Check that interior and exterior unit DIP switches are set correctly.

(Unit will not operate if not set correctly.)

1. Interior unit

Interior unit circuit board	DIP switches	Settings	Items to check
 Printed circuit board	① DSW1 RSW1 RSW2	Interior unit address	<p>① Manual address setting</p> <ul style="list-style-type: none"> Check that the 3 settings switches are positioned correctly. Check that address numbers do not overlap those of other interior units. <hr/> <p>② Automatic address setting and remote control address setting</p> <ul style="list-style-type: none"> Check that all interior units are set to [0 0 0] (shipping setting).
 Communication circuit Board	② DSW2 RSW3 RSW4	Corresponding exterior unit address	<p>① Manual address setting</p> <ul style="list-style-type: none"> Check that setting is the same as numbers for the "exterior unit address" of exterior units connected by cooling medium piping. Check that the 3 settings switches are positioned correctly. <hr/> <p>② Automatic address setting</p> <ul style="list-style-type: none"> Check that all interior units are set to [0 0 0] (shipping setting).
 Communication circuit Board	③ DSW4	Group address Power setting Estimated filter time Louver status Branch address	<p>1-4: Sub-unit address set for group control</p> <p>5: [OFF] Power off (shipping setting) [ON] Power on</p> <p>6: [OFF] Filter cleaning display set automatically by interior unit (shipping setting) [ON] Estimated operating interval to filter cleaning display is 2500 hours.</p> <p>7: [OFF] Louver operation set automatically by interior unit (shipping setting) [ON] Louver operation forced to OFF.</p> <p>8: Set when connected to cooling medium branch unit in multi-heating/cooling mode.</p>

2. Exterior unit

Exterior unit circuit board (control board)	DIP switches	Settings	Items to check
 CU-P224MX1XP~P280MX1XP	① DSW1 (1,2)	Test switch (for testing)	<ul style="list-style-type: none"> (When test run is complete)…Check that all switches are turned off.
 CU-P224MX1XP~P280MX1XP	② DSW1 (3,4)	Piping length settings	<ul style="list-style-type: none"> Check that settings are matched to piping length. Within approximately 0-30m (actual measurement) <ul style="list-style-type: none"> Within approximately 30-70m (actual measurement) <ul style="list-style-type: none"> Within approximately 70m or more (actual measurement)
 CU-P224MX1XP~P280MX1XP	③ DSW3 RSW1 RSW2	Exterior unit address	<p>① Manual address and remote control address setting</p> <ul style="list-style-type: none"> Check that the 3 settings switches are positioned correctly. Check that address numbers do not overlap those of other exterior units. <p>② Automatic address setting</p> <ul style="list-style-type: none"> Check that all exterior units are set to [0 0 0] (shipping setting).

• "Interior unit address/Corresponding exterior unit address" can be checked by remote control (separate version)

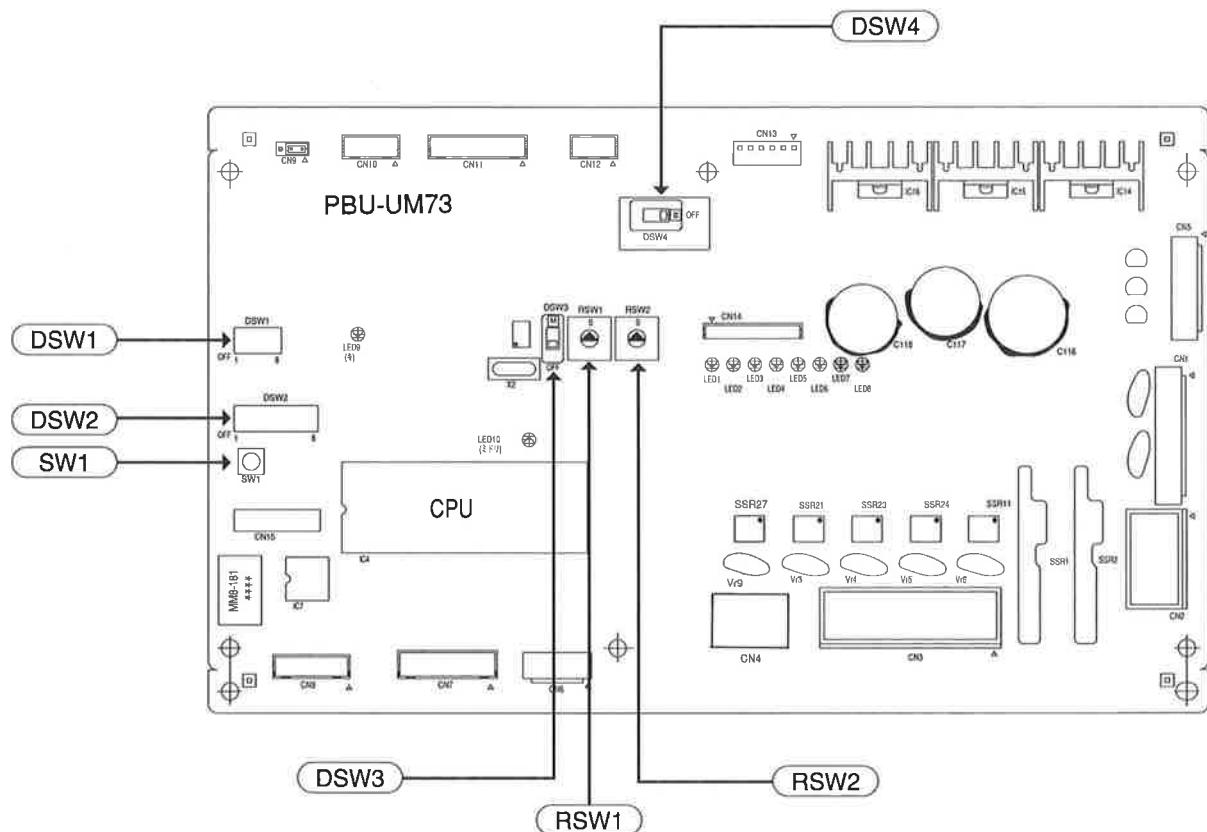
• Make all address changes with power [ON].

②Outdoor unit printed circuit board DIP switch functions and settings

CU-P224MX1XP/P280MX1XP

In order to ensure correct operation, be sure to set and check the DIP switches according to the details on the next page. If the DIP switches are not set correctly, correct operation will not be possible.

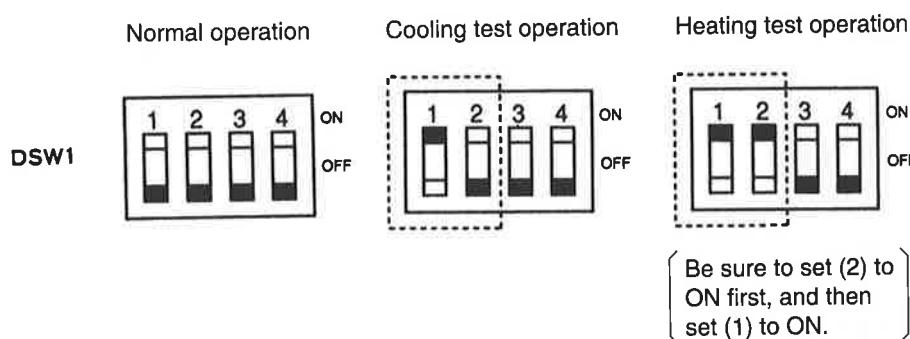
Outdoor unit printed circuit board



- DSW1 Settings for test operation (setting required for test operation)
- DSW1 Pipe length setting (setting required for test operation)
- DSW2 Horsepower setting (set at time of shipment from factory)
- DSW2 Compressor emergency operation setting (setting not required)
- DSW3 RSW1 RSW2 Outdoor unit address setting (setting required for manual address setting)
- SW1 Automatic address resetting (operation not required)
- DSW4 Power supply setting for "URBAN-NET" (24V DC)

DSW1 Test operation

DIP switches 1-1 and 1-2 can be used to set all indoor units which are connected to the same refrigerant piping system to test operation (cooling and heating) from the outdoor unit.

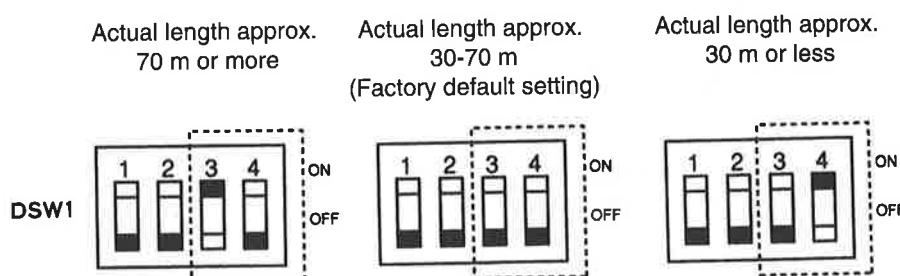
**NOTE**

1. When using test operation for the first time, be sure to run in cooling mode for 5 minutes or more.
2. The indoor unit pipe temperature will be displayed on the remote control unit during test operation.
3. When test operation is finished, turn all switches to OFF. The indoor units should always be turned off from the remote controller or from some other remote control device.

DSW1 pipe length

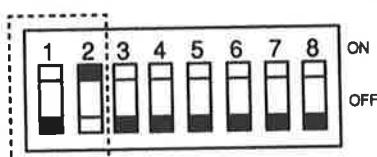
Set outdoor unit DIP switches 1-3 and 1-4 as shown in the diagrams below in accordance with the refrigerant pipe length (actual length).

(If the DIP switches are not set correctly, correct operation will not be possible.)

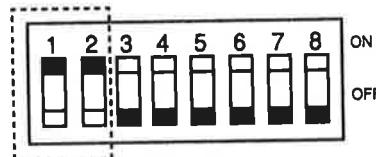
**DSW2** capacity setting

DIP switches 2-1 and 2-2 are set to the product's capacity at the time of shipment from the factory. Never change these settings.
(If a setting other than that shown below is made, an error will be displayed.)

CU-P224MX1XP
(8HP)

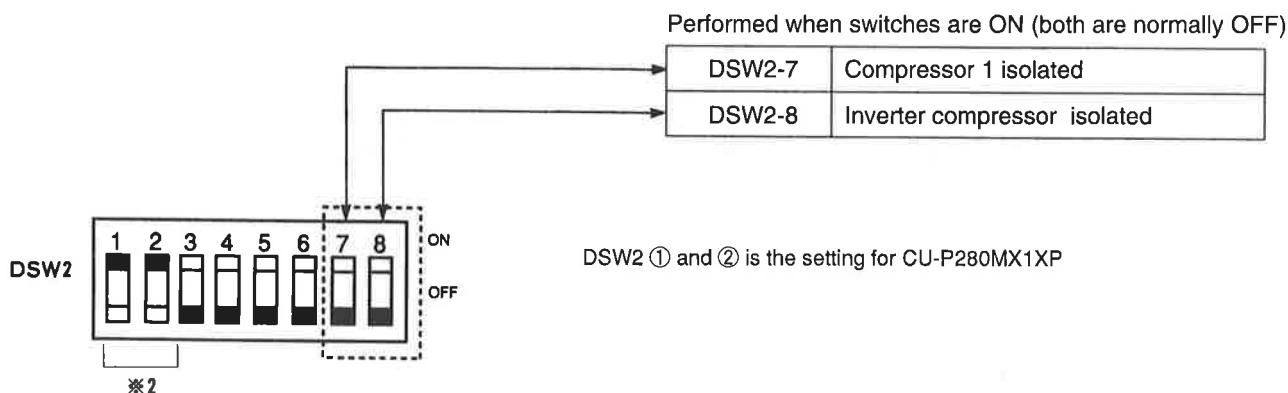


CU-P280MX1XP
(10HP)



DSW2 Compressor emergency operation setting

DSW2 ⑦ and ⑧ can be set so that the problem compressors can be isolated from the normal compressor control system if a problem occurs with compressor operation.



DIP switches 2-7 and 2-8 are for emergency mode operation. If a compressor malfunction occurs, that compressor should be repaired as quickly as possible so that normal operation can resume. Furthermore, DIP switches 2-3 to 2-6 are not required for normal operation, and so they should be left at the OFF position.

DSW3 RSW1 RSW2 Address setting

Three switches are used to set the outdoor unit address.
Each switch sets the hundreds, tens and units digit respectively.

	DSW3	RSW1	RSW2
	ON OFF 	The hundreds digit 	The tens digit
Example of setting outdoor unit address to 75	ON OFF 	The units digit 	
Example of setting outdoor unit address to 138	ON OFF 		

DSW4 Power supply setting for "URBAN-NET" (24V DC).

To ensure correct operation, when the wiring construction work is complete, set the supply power switch 「ON」 control printed circuit Board for DSW4.

SW1 Automatic address setting



SW1
(Push button switch)

If the automatic address setting is not performed normally after the power supplies have been turned on for all indoor and outdoor units, push switch 1 on the outdoor unit printed circuit board continuously for 4 seconds or more. The address setting memory will be cleared, and automatic address setting will be carried out once more.

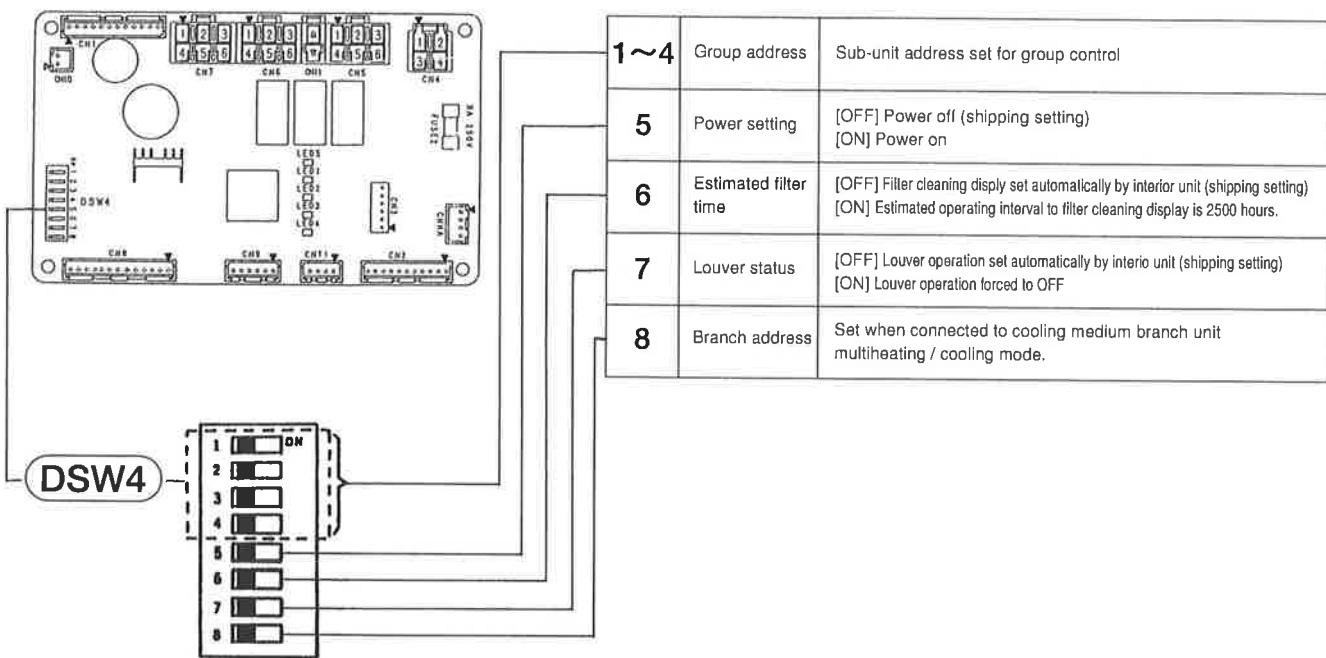
(LEDs 1 to 8 on the outdoor unit printed circuit board will illuminate in sequence. Check that all LEDs 1 to 8 are illuminated, and then release switch 1.)

NOTES

- When repeating the setting procedure, first check that there are no problems with the system.
- Automatic address setting cannot be carried out unless the outdoor unit address for the outdoor unit and the applicable outdoor unit address of each indoor unit are all set to "000".
- This procedure is only possible when the refrigerant pipe pair method is being used.

③ Indoor unit DIP switch function and settings

- Indoor unit DIP switch



④ Remote controller DIP switch function and settings

- DIP switch 4 [Set when using group control with one remote control unit]
[DSW4 - 1~4 - 4]

- Up to 16 indoor units can be controlled by a single remote control unit.
- All indoor units run in the same mode.
- Error displays indicate that the unit number is incorrect.
- Two remote control units can also be used together.

⚠ Caution

For the second and subsequent units (No. U1 and after), be sure to disconnect the CN8 connector on the indoor unit circuit board, otherwise the circuit board will be damaged.

Indoor unit No.	U0	U1	U2	U3	U4	U5	U6	U7
DIP switch (DSW4) address setting on indoor unit printed circuit board	OFF ON 1 2 3 4							
No operation necessary (factory setting)	1 is ON	2 is ON	1 and 2 are ON	3 is ON	1 and 3 are ON	2 and 3 are ON	1, 2 and 3 are ON	
Indoor unit address	Master unit (0)	Slave unit 1	Slave unit 2	Slave unit 3	Slave unit 4	Slave unit 5	Slave unit 6	Slave unit 7
Indoor unit No.	U8	U9	U10	U11	U12	U13	U14	U15
DIP switch (DSW4) address setting on indoor unit printed circuit board	OFF ON 1 2 3 4							
4 is ON	1 and 4 are ON	2 and 4 are ON	1, 2 and 4 are ON	3 and 4 are ON	1, 3 and 4 are ON	2, 3 and 4 are ON	1, 2, 3 and 4 are ON	
Indoor unit address	Slave unit 8	Slave unit 9	Slave unit 10	Slave unit 11	Slave unit 12	Slave unit 13	Slave unit 14	Slave unit 15

(At the time of shipment from the factory, all switches are at OFF.)
Turn off the power before changing any of the settings.

7.ADDRESS SETTING indoor unit and outdoor unit address

The three address setting methods available are [manual address setting][remote controller address setting] and [automatic address setting]. The address numbers must be set by using any one of these methods.

Unit address settings

1.Address settings such as those shown in the table below must be carried out for the indoor units, outdoor units and remote controller. If the settings are not made correctly, normal operation may not be possible.

	Address type	Applicable unit for address type at left	Address setting method
A.Address necessary for indoor/outdoor unit communication	Indoor unit address	Indoor units	Refer to remote controller operating instructions
	Outdoor unit address	Indoor and outdoor units	
B.Address necessary for group control with one remote controller	Group address	Indoor units	Refer to remote controller operating instructions
C.Address necessary for control with two remote control units	Master/slave setting	Remote controller	Refer to remote controller operating instructions

- Refer to the Installation Manual which is provided with the remote controller for details on address settings B and C in the above table.
- Indoor unit address are numbers which are used to identify indoor units. They should never overlap with each other. If they do overlap, correct control will not be possible.
- Outdoor unit address are stored both in the indoor unit circuit boards and outdoor unit circuit boards. They are used to indicate which indoor units are connected to which outdoor units by means of the refrigerant pipes. Use the same unique address setting for indoor units and outdoor units which are connected by the same refrigerant pipes. If the address overlap, correct control will not be possible.

•Address numbers which are required for indoor units

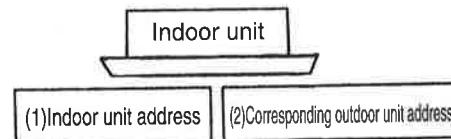
(1)Indoor unit address

•These address are used to uniquely identify each of the indoor units.

The address are different for each indoor unit.

(2)Corresponding outdoor unit address

•These address indicate which outdoor unit a particular indoor unit is connected to. It is set to the same number as the outdoor unit address.

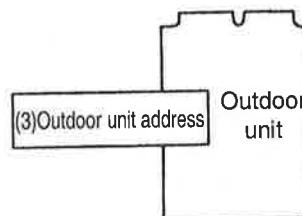


•Address numbers which are required for outdoor units

(3)Outdoor unit address

•These address are used to uniquely identify each of the outdoor units.

The address are different for each outdoor unit.



2.Any one of three setting methods can be selected for address setting method

A above depending on the address type and wiring method.

1.Automatic address setting

2.Manual address setting

3.Remote controller address setting

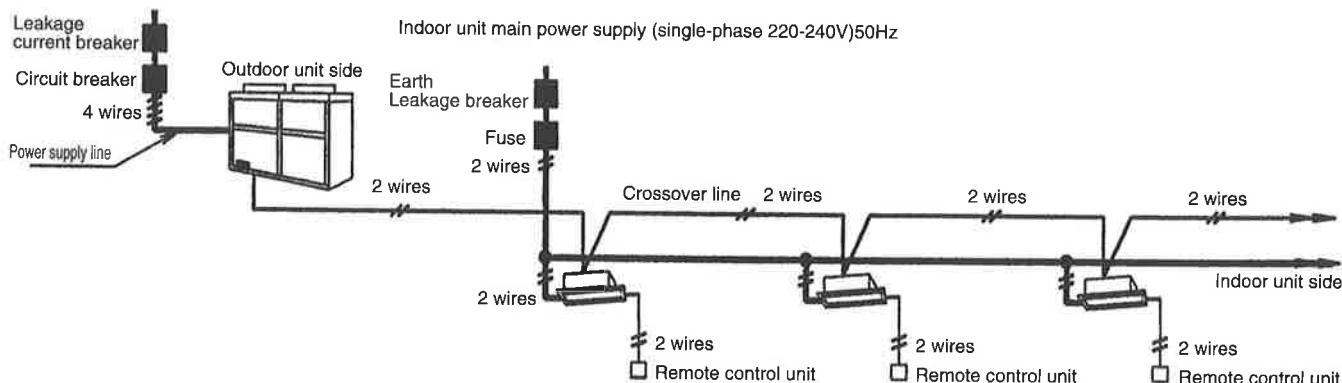
Address type Wiring method	Indoor unit address		Outdoor unit address				Remarks	
	Indoor unit		Indoor unit		Outdoor unit			
Address setting method	Refrigerant pipe pair method	Urban Net method	Refrigerant pipe pair method	Urban Net method	Refrigerant pipe pair method	Urban Net method		
1.Automatic		Not possible		Not possible	Only 1 unit possible	Not possible	Only possible for refrigerant pipe pair method	
2.Manual	Up to 12 units possible	Up to 200 units possible	Up to 12 units possible	Up to 200 units possible	Only 1 unit possible	Up to 200 units possible		
		Up to 200 units possible *1		Up to 200 units possible *1	Not possible			
3.Remote controller								

*1. A remote controller is required for each indoor unit.
(Group control with one remote control unit is also possible.)
(However, group address cannot be set automatically.)

① Automatic address setting procedure

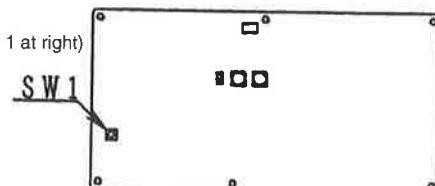
If the refrigerant pipe pair method of wiring has been used, the addresses can be set automatically. (This is not possible of a centralized control equipments has been connected.)

Outdoor unit main power supply (3-phase 4 line 380-415V) 50Hz



- Set the indoor unit and outdoor unit address setting switches to the "000" (cleared) setting. (These switches are set to "000" at the time of shipment from the factory.)
- Turn on the power supply for all indoor units, and then turn on the power supply for the outdoor units. (Simultaneously is also possible.)
When the outdoor unit power supply is turned on, the address will be set automatically. (Automatic setting will be complete approximately one minute after the power is turned on.)
However, if the power supply for even one of the indoor units has not been turned on at this point, automatic address setting will not be possible when the outdoor unit power supply is turned on.
- After automatic address setting is complete and the RUN switch on the remote control unit is pressed, "FAN", "MED" and "TEMP" will be displayed. If you then press the TEST switch and then the CHECK switch after about a further 10 seconds, the indoor unit address will be displayed.
- Automatic address setting occurs even when using group control with one remote controller. (However, the group address cannot be set automatically.)
- Addresses which have been set automatically will be retained even when the power is turned off. If you wish to reset the addresses, use the remote controller to clear the address settings for all of the indoor units connected, and then repeat the above procedure from step 2, or follow step 8 below to repeat the automatic address setting.
- If the refrigerant pipe pair method of wiring has been used, you can also use [the manual address setting method] (on the circuit boards)or [the remote controller address setting method] to set the address.
- Crossover wires cannot be connected to indoor units which belong to a different outdoor unit system.
*When the indoor unit power supplies are turned on, the check display appears, however this check display can be cleared after automatic address setting is complete by operating the RUN switch on the remote controller.
*If the check display (E25) does not disappear, turn the power supply for the outdoor unit off and then back on again.
*If the check display (E25) does not disappear even after turning the outdoor unit power supply off and then back on again, use the remote controller unit to set all of the indoor and outdoor unit address back to "000", and then repeat the above procedure from step 2 or carry out step 8 below.
- Automatic address resetting can also be carried out by the following procedure.
After turning on the power supply for all indoor and outdoor units, press switch 1 on the outdoor unit printed circuit board (Fig. 1 at right) continuously for 4 seconds or more to automatically reset all address.
(LEDs 1 to 8 on the outdoor unit printed circuit board will illuminate in sequence.)
Check that all LEDs 1 to 8 are illuminated, and then release switch 1.)
*Automatic address setting cannot be carried out unless the outdoor unit address for the outdoor unit and the applicable outdoor unit address for each indoor unit are all set to "000".

(Fig. 1 at right)

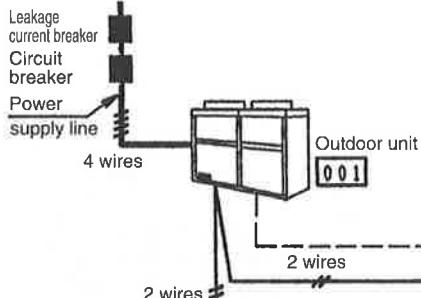


② Manual address setting procedure

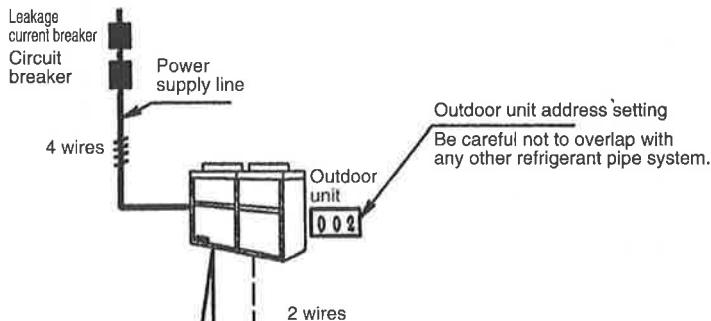
This method can be used for all connection methods, such as the Urban Net method (when all units are connected to a single bus line, regardless of the refrigeration pipe system).

Address setting example

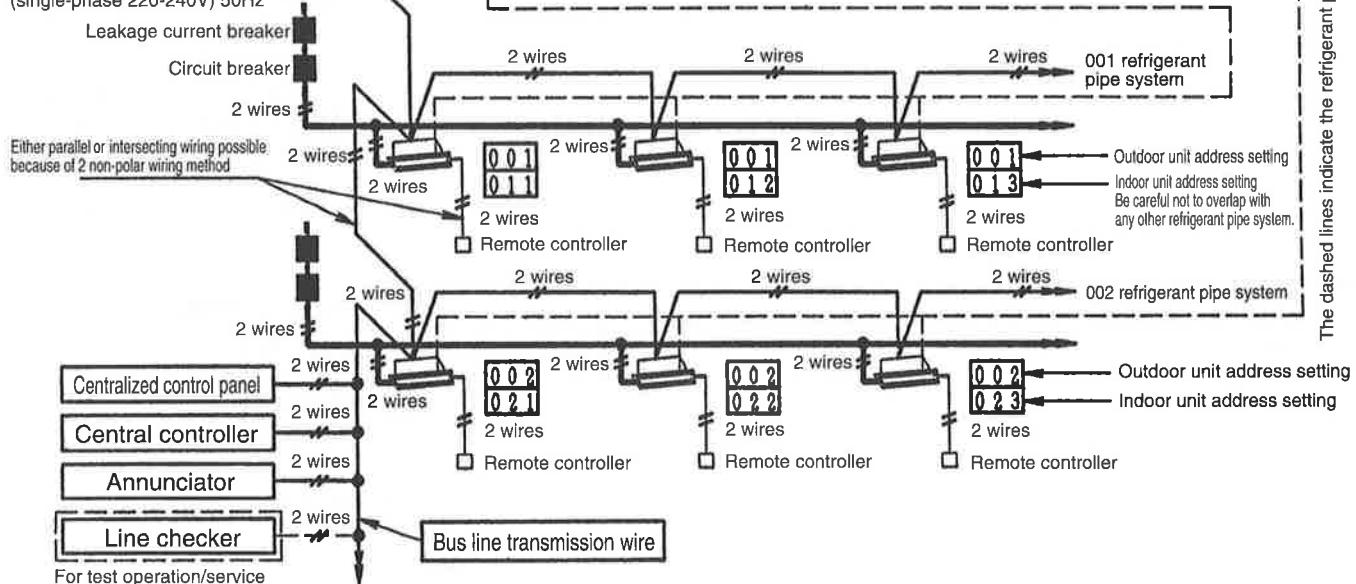
Outdoor unit main power supply (3-phase 4 line 380-415V) 50Hz



Outdoor unit main power supply (3-phase 4 line 380-415V) 50Hz



Indoor unit main power supply (single-phase 220-240V) 50Hz



The dashed lines indicate the refrigerant piping.

1. Address settings are carried out using the switches on each unit's circuit board. (Refer to the next page.)
2. The initial address settings should be made when the power supplies for all units are turned off. These address will be stored once the power is turned on.
3. While referring to the following page: (1) Set the outdoor unit address for the outdoor units.
 (2) Set the indoor unit address and the corresponding outdoor unit address for each indoor unit.
 (3) Refer to the address setting example shown in the diagram above.
4. The outdoor unit address setting for the indoor units and the outdoor unit address setting for the outdoor unit in the same refrigerant piping system should be identical. (Refer to the diagram above.)

NOTE:

- The outdoor unit main power supply is supplied from the unit which is switched on to the DSW4.

Outdoor unit address setting (outdoor unit circuit board)

- (1) Make the setting with the outdoor unit power still turned off.
 (2) Use the three setting switches to set a three-digit number.

(Example)

Address 3 -> [003]

Address 10 -> [010]

- (3) Set the numbers in order so that there is no overlapping.

(Example) [001] [002] [003] [003] [004] ...

If the addresses overlap, correct operation will not be possible.

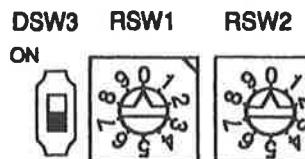
[Address setting example]

*To set address 25

- DSW3: Set to OFF (Factory default)
- RSW1: Set to "2"
- RSW2: Set to "5"

*To set address 135

- DSW3: Set to ON (Factory default)
- RSW1: Set to "3"
- RSW2: Set to "5"

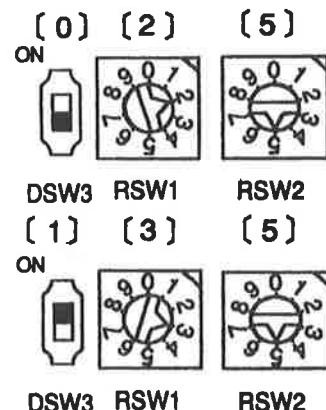


DSW3:Address setting switch for the hundreds digit.

ON: Hundreds set; OFF: Hundreds not set

RSW1:Address setting switch for the tens digit.

RSW2:Address setting switch for the units digit.



Indoor unit address setting (indoor unit circuit board)

- (1) Make the setting with the indoor unit power still turned off.
 (2) Use the three setting switches to set a three-digit number.

(Example)

Address 6 -> [006]

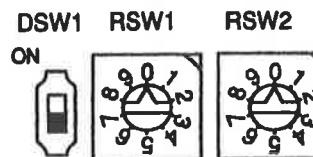
Address 12 -> [012]

Address 116 -> [116]

- (3) Set the numbers in order so that there is no overlapping.

(Example) [001] [002] [003] [003] [004] ...

If the addresses overlap, correct operation will not be possible.



DSW1:Address setting switch for the hundreds digit.

ON: Hundreds set; OFF: Hundreds not set

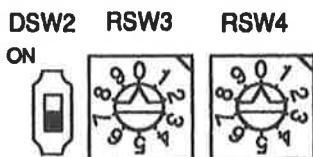
RSW1:Address setting switch for the tens digit.

RSW2:Address setting switch for the units digit.

Corresponding outdoor unit address setting

(indoor unit circuit board)

- (1) Make the setting with the indoor unit power still turned off.
 (2) This address indicates which outdoor unit and refrigerant piping system the indoor unit is connected to, so check the outdoor unit address for the outdoor unit connected, and set the same number as this address (outdoor unit address).



DSW2:Address setting switch for the hundreds digit.

ON: Hundreds set; OFF: Hundreds not set

RSW3:Address setting switch for the tens digit.

RSW4:Address setting switch for the units digit.

<Notes when making address settings>

- The indoor unit address settings must never overlap with any of the other indoor units.
- The outdoor unit address settings must not overlap with the settings for other outdoor units.
- Do not set to "000".
 In order to make working, maintenance and checking easier, start from "001" and do not skip any numbers.
- Be sure to leave the power turned off when making address settings.
- Finish all of the outdoor unit address settings before making the indoor unit address settings.

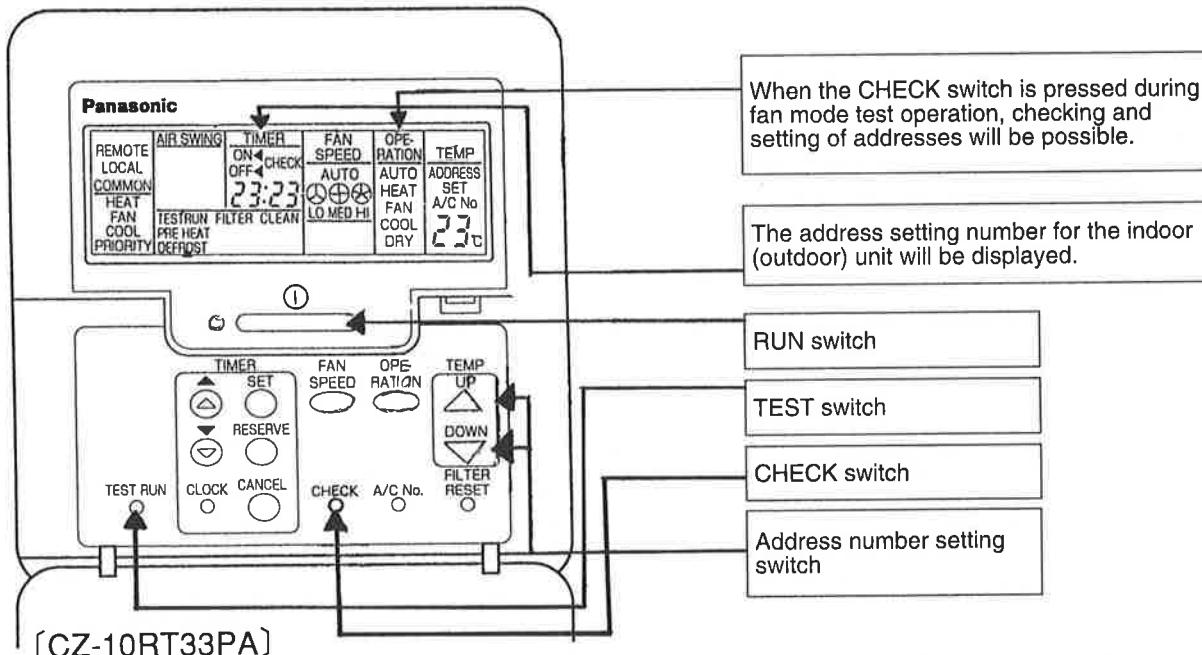
<If changing an address once it has been set>

Be sure to turn the indoor unit power supply on and then change the address setting to the desired setting.

Address are already stored once they have been set, so that the address change will not be registered if you simply turn off the power and change the DIP switch settings.

③ Remote controller address setting

This method can be used when remote controller are connected to all indoor units (and also when group control using one remote controller is being used).



[CZ-10RT33PA]

- Turn on the power supply for the indoor units. The indoor unit address can then be set using the remote controller.
(Make the outdoor unit address setting using the DIP switches on the outdoor unit circuit board. This cannot be done using the remote controller.)
- Two address settings are necessary for each indoor unit. These are the outdoor unit address for the outdoor unit which is connected to the indoor unit's refrigerant piping system, and the indoor unit address for the indoor unit itself. Both of these address can be set using the remote controller.
- The address numbers cannot be set to "000".
This is because "000" is used to clear the address setting memory.)
- After setting fan mode test operation, wait about 10 seconds and then press the CHECK switch.
Address checking and setting will then be possible. (It can take up to one minute for the address to be displayed.)
The address setting number will appear in the TIMER SET display.
Use the ON TIMER switch to set the indoor unit address, and use the OFF TIMER switch to set the outdoor unit address. The setting will then appear in the display.
(See table at right.)
- TIMER SET switches
Press the **▲** switch to increase the setting.
Press the **▼** switch to decrease the setting.
The display will flash while the address setting number is being changed.
- Press the CHECK switch to accept the address setting. The new number will then appear steadily in the display.
- Press the ON/OFF switch to change the mode, and then repeat the procedure to set both the indoor unit address and outdoor unit address.
- Press the CHECK switch once more. The address display will then be cleared and the setting will remain in memory even if the power is turned off.

Display	Setting address
「ON」	→ Indoor unit address
「OFF」	→ Outdoor unit address

Changing address settings

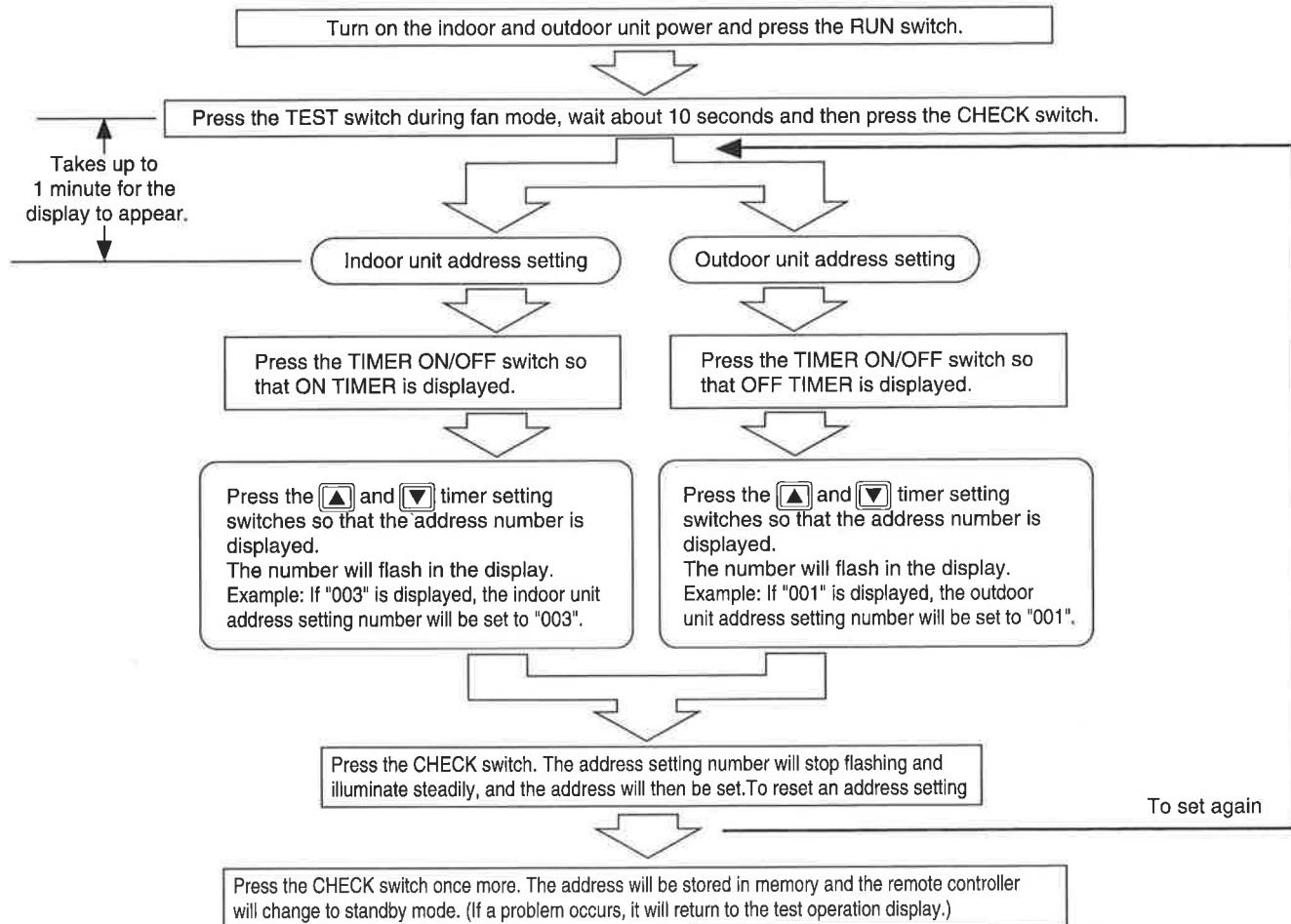
Repeat steps 1 to 6 above to change a setting.

Clearing an address setting number

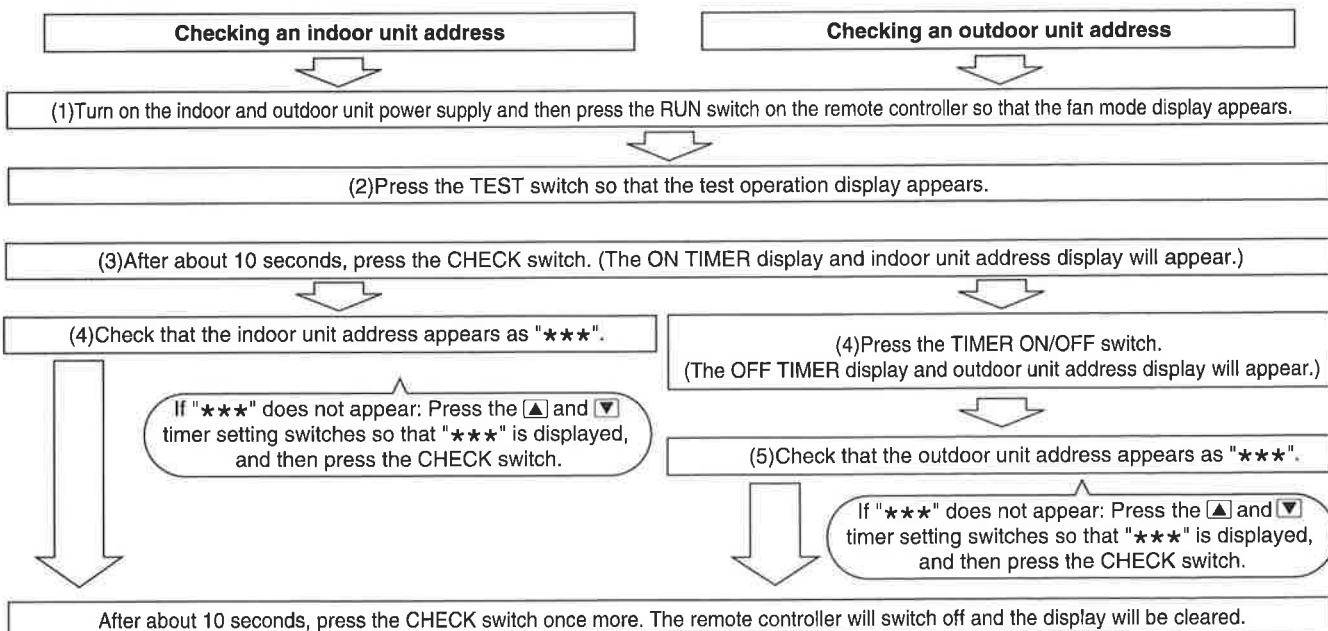
If the displayed address setting number is changed to "000", the setting will be cleared from memory.

6.CONTROL SYSTEM

Remote control unit address setting example



(Using a remote control unit [sold separately] to check the address for an indoor unit or outdoor unit)



*After checking, be sure to turn off the power supplies for all indoor units and outdoor units.

7 SAFETY DEVICES AND THERMOSTAT SETTING VALUES

① UMXR

Outdoor units

Protective device			Product No.	CU-P224MX1XP	CU-P280MX1XP
High pressure switch (63H)	OFF	MPa (kgf/cm ²)	3.1 (31.6)	3.1 (31.6)	3.1 (31.6)
	ON	MPa (kgf/cm ²)	2.3 (23.5)	2.3 (23.5)	2.3 (23.5)
Discharge temp protection (Th1, Th2)	OFF	°C	120	120	120
	ON	°C	90	90	90
Current detector (CTB1,2)	Inverter Compressor	OFF	A	20	20
	Fixed speed Compressor	OFF	A	15	15
Over Current Relay (51C1,2)	Inverter Compressor	ON	—	Automatic reset	Automatic reset
	Fixed speed Compressor	ON	—	Automatic reset	Automatic reset
PM Internal Thermostat (PM)	Inverter Compressor	OFF	A	25	25
	Fixed speed Compressor	ON	—	Manual reset	Manual reset
Fan Motor Internal Thermostat (FM1,2)	OFF	°C	110	110	110
	ON	°C	90	90	90
Fusible Plug	OFF	°C	135	135	135
	ON	°C	88	88	88
Crank case Heater (CH)		—	75	75	75
Crank case Heater (CH)		W	33×2	33+37	33+37

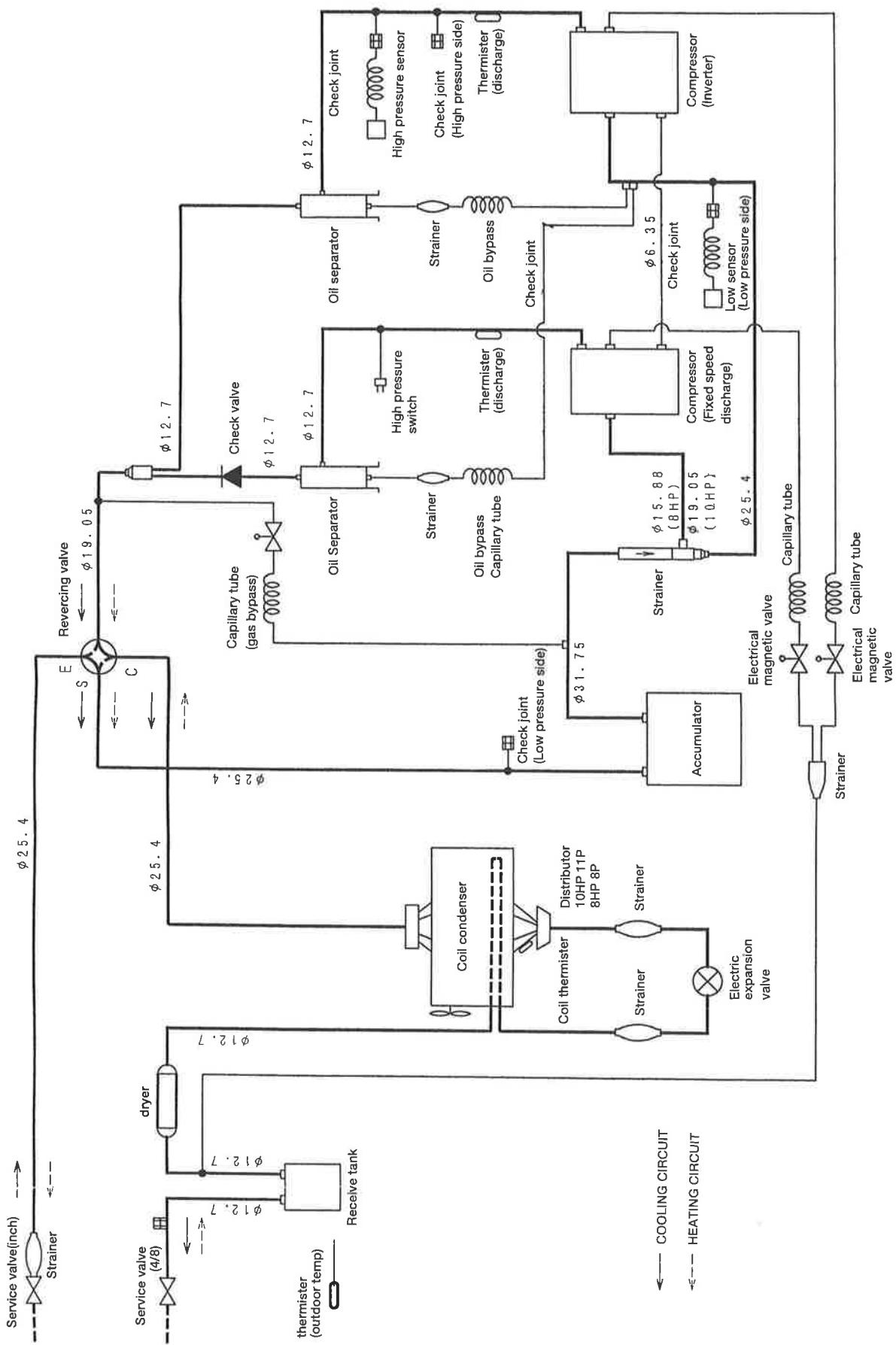
Indoor units

Product No.			UM-TYPE Four-way cassette type	KM-TYPE wall type
Protective device				
Fan internal thermostat	OFF	°C	135	135
	ON	°C	88	88
Overflow switch			Yes	—

Product No.			EM-TYPE Hide-Away type	DM-TYPE One-way type
Protective device				
Fan internal thermostat	OFF	°C	135	135
	ON	°C	88	86
Overflow switch			Yes	Yes

8 REFRIGERATION CYCLE

① UMXR CU-P224MX1XP, CU-P280MX1XP

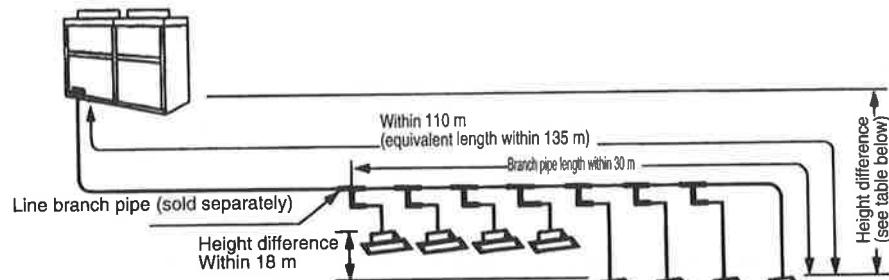


9 REFRIGERANT PIPING SYSTEM

1.PIPING INSTALLATION PROCEDURE

①Refrigerant piping method

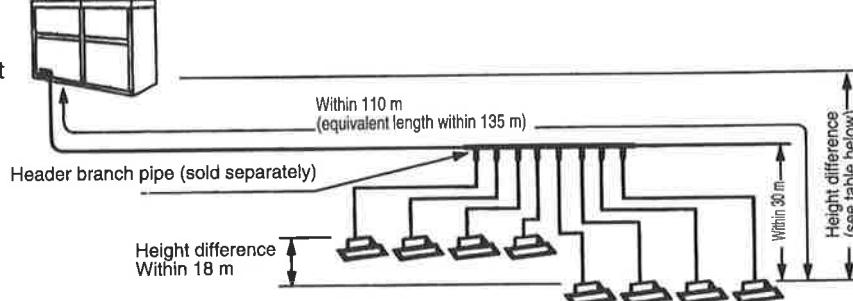
Line piping method



Header piping method

NOTE

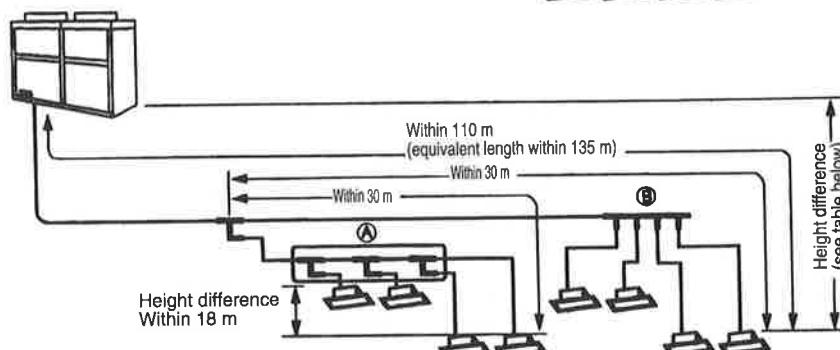
Connecting the piping again is not possible once the header branch has been connected.



Combined and header piping method

NOTE

Changing the piping again is not possible once the header branch has been connected.



• Piping conditions

Maximum piping height difference conditions	Between indoor and outdoor units	Within 50 m when outdoor unit raised Within 40 m when outdoor unit lowered
	Between indoor units	Within 18 m

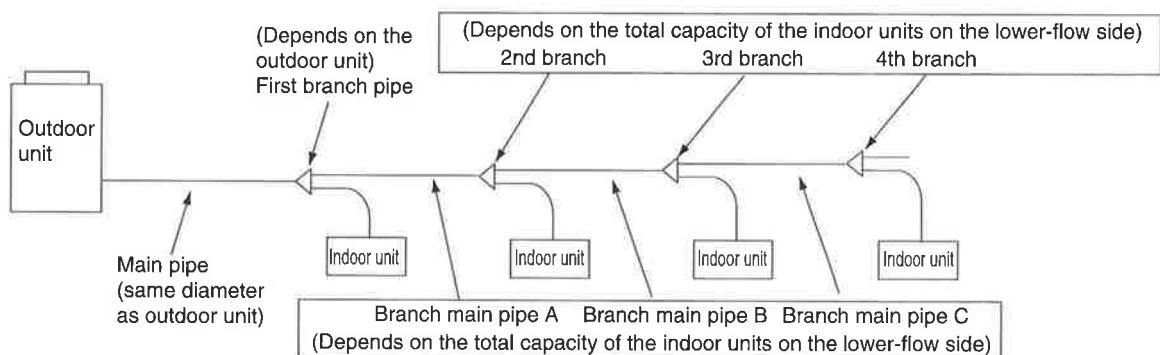
Piping length conditions	Max. distance from outdoor units to indoor units	Within 110 m (equivalent length 135 m)
	From first branch to furthest indoor unit	Within 30 m
	Total actual piping extensions	Within 250 m

② LINE PIPING METHOD

■ Line branch pipe

Part name	When the total lower flow capacity(Kw) is as follows from the 2nd branch		Gas pipe	Liquid pipe
	Gas pipe	Liquid pipe		
CZ-39PBKV3	19.0~39.5	φ 25.4	φ 12.7	
CZ-19PBKV3	9.0~19.0	φ 19.05	φ 12.7	
CZ-09PBKV3	Less than 9.0	φ 12.7	φ 9.52	

Selection outline The total capacity of the connected indoor units can be from 50% to 135% of the total capacity of the outdoor units.



Note: When the equivalent piping length exceeds 90 m, increase the diameter of the gas-side pipe.

● Main pipe only

Outdoor unit	Standard liquid-side pipe diameter	Standard gas-side pipe diameter	Increased gas pipe size
CU-P224MX1XP	φ 12.7 X t1.0	φ 25.4 X t1.2	φ 28.58 X t1.4
CU-P280MX1XP		φ 28.58 X t1.2	φ 31.8 X t1.4

Minimum capacity of connected indoor units		Max. no. of indoor units
Outdoor unit type		
CU-P224MX1XP		12
CU-P280MX1XP	CS-22 type (2.2 kW)	12

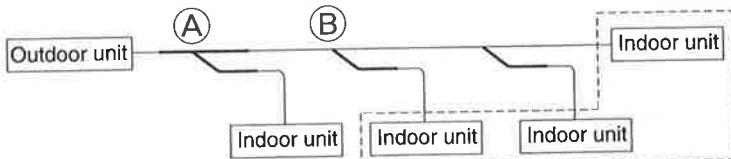
Calculated indoor unit capacity		Indoor unit piping diameter x thickness	
Indoor unit type	Capacity (kW)	Gas side	Liquid side
CS-P22 TYPE	2.2	φ 12.7 X t1.0	φ 9.52 X t1.0
CS-P28 TYPE	2.8		
CS-P45 TYPE	4.5		
CS-P56 TYPE	5.6		
CS-P71 TYPE	7.1	φ 15.88 X t1.0	φ 9.52 X t1.0
CS-P80 TYPE	8.0		
CS-P112 TYPE	11.2	φ 19.05 X t1.0	φ 9.52 X t1.0
CS-P140 TYPE	14.0		

(1) Pipe size selection

Main pipe (Between Outdoor unit and First branch)

- Both gas side pipe and liquid side pipe are the same diameter with the connecting pipe

Branch main pipe (Between each branch kit)



Outside dia. x min. thickness		
Total capacity (kW)	Gas side	Liquid side
Less than 9.0	$\phi 12.7 \times 1.0$	$\phi 9.52 \times 1.0$
9.0-19.0	$\phi 19.05 \times 1.0$	$\phi 12.7 \times 1.0$
19.0-39.5	$\phi 25.4 \times 1.2$	$\phi 12.7 \times 1.0$

- In order to calculate the diameter of the main branch pipe which runs in between the two branch pipes, first calculate the total capacity of all of the indoor units which are downstream from the branch pipes of the downstream side.

Next, use this calculated value to obtain the pipe diameter from the table at right.

In the diagram above, the main branch pipe between branch pipes (A) and (B) should be selected based on the total capacity of the indoor units inside the dotted line.

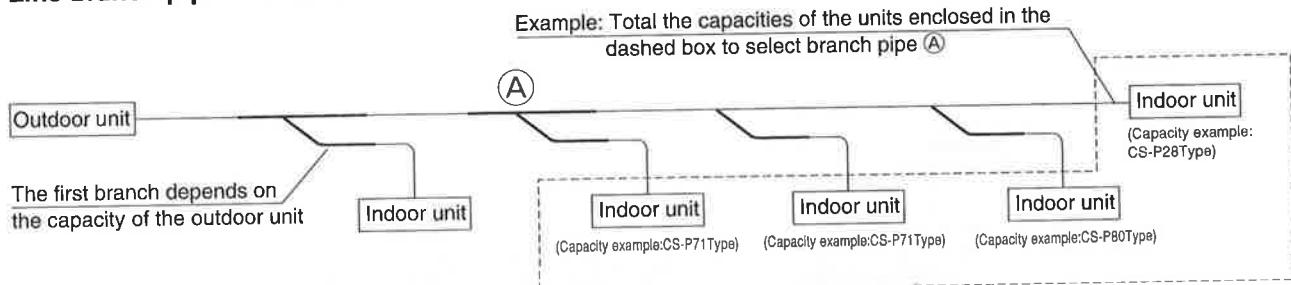
- When the equivalent piping length exceeds 90m, increase the diameter of the gas-side pipe.

Piping between branch and indoor units

Use pipe matched to the size of the indoor unit connection pipe size.

(2) Branch pipe selection

Line branch pipe selection



- Total the capacities of the indoor units connected to the branch pipe that you want to select, and select the pipe that matches from the table below. With regard to selection for the branch pipe (A) shown in the diagram above, the total capacity of the section enclosed in the dashed box is the region used for selection. Use this region to select the branch pipe for the successive branch pipes. Note, however, that the first branch pipe depends on the capacity of the outdoor unit*.

Total capacity (kW)	Appropriate branch pipe part number
Less than 9.0	CZ-09PBKV3
9.0-19.0	CZ-19PBKV3
19.0-39.5	CZ-39PBKV3

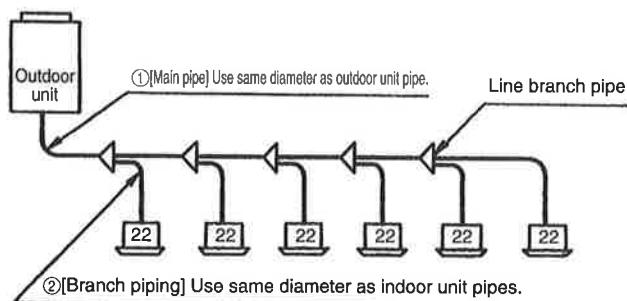
Selection example: Selecting using the capacities in the above example gives branch pipe CZ-39PBKV3 for (A) from the formula below.
 $7.1 + 4.5 + 8.0 + 2.8 = 22.4$

•Example of line branch piping selection

(1)Selecting the main pipe and branch pipes for the refrigerant piping *1

- (1)[Main pipe] (Between outdoor unit and The first branch pipe) ⇨ Use same diameter as outdoor unit pipe.
 (2)[Branch piping] ⇨ Use same diameter as indoor unit pipes.

<Example>



*1If the pipe equivalent length is 90 m or more
It is necessary to increase the size of only the
gas-side main pipe. (Other pipes and junction
pipes will not be affected.)

(Outer diameter x Min. thickness mm)

Outdoor unit	Gas-side main pipe
CU-P224MX1XP	φ 28.58×1.4
CU-P280MX1XP	φ 31.80×1.4

•Example No.1

(1)[The first branch]



[Be sure to use the CZ-39PBKV3.]

(2)[Selecting refrigerant pipe diameter]



[The size changes depending on whether the total capacity
of the downstream indoor units is 19.0 or more or less than 19.0.]

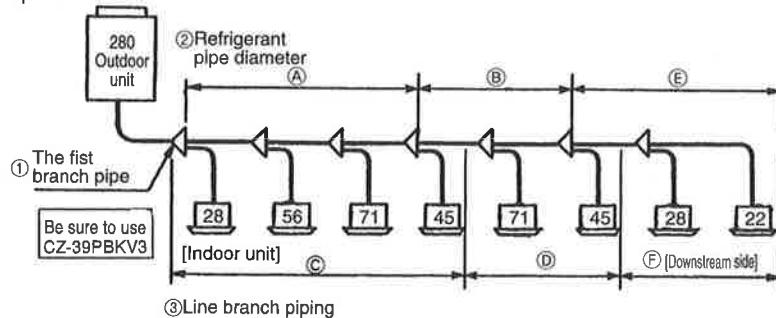
[The size changes depending on whether the total capacity of
the downstream indoor units is 9.0 or more or less than 9.0.]

(3)[Selecting branch piping]



Total capacity of indoor units	(2)Refrigerant pipe diameter	(3)Line branch piping
19.0 or more	Ⓐ: Gas φ 25.4 mm, liquid φ 12.7	Ⓒ: CZ-39PBKV3
9.0～19.0	Ⓑ: Gas φ 19.05 mm, liquid φ 12.7	Ⓓ: CZ-19PBKV3
Less than 9.0	Ⓔ: Gas φ 12.7 mm, liquid φ 9.52	Ⓕ: CZ-09PBKV3

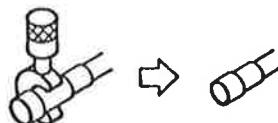
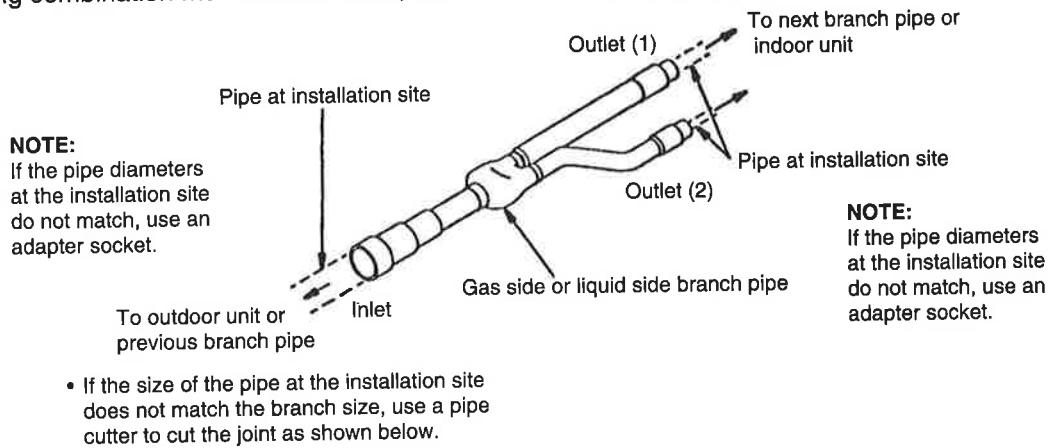
<Example>



(3) Installation procedure-Branch pipe

(Gas side and liquid side)

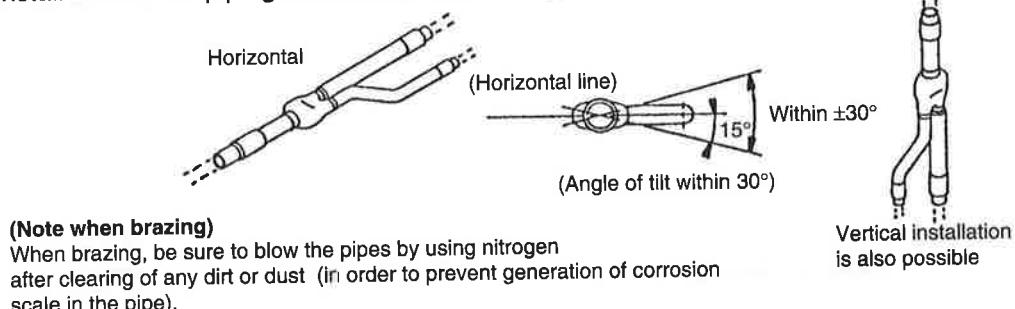
(If using combination multi outdoor units, the inlet and outlet ends are reversed.)



- To increase the pipe diameter of the CZ-39PBKV3 gas side or liquid side branch pipe, weld on the CZ-39PBKV3 adapter socket.

■ Notes when connecting piping

Please install the branch piping is horizontal or vertical.

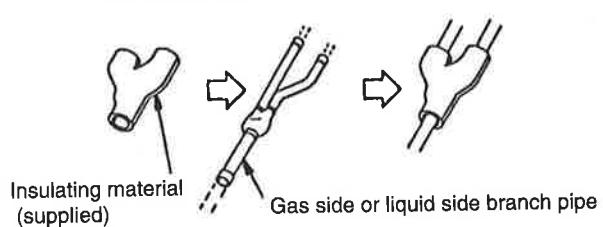


■ Heat insulating procedure

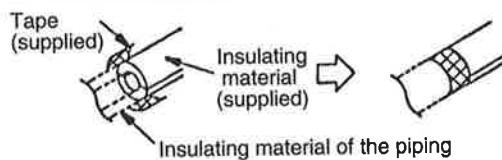
Insulate the branch pipes on the gas side and liquid side against heat.

NOTE: Use an insulation material that can withstand heat of 120°C on the gas side.

- 1) Insulate the gas side and liquid side with the heat insulating material.



- 2) Use tape to seal the joints between the insulating material and the insulating material of the piping.



③HEADER PIPING METHOD

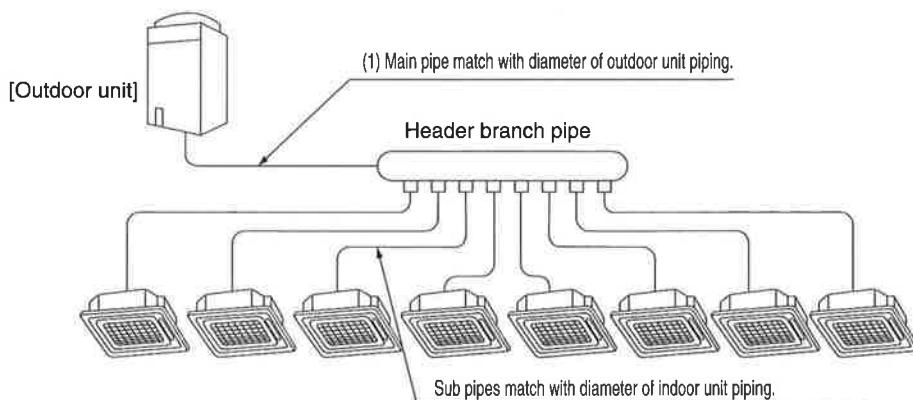
■ Header branch pipe

	CZ-08PHKV3 8 branches		
For 8 - 38 HP	CZ-06PHKV3 6 branches		
	CZ-04PHKV3 4 branches		

(1)Selecting the main refrigerant pipe and branch pipe

[Main pipe] (Outdoor unit - Branch No.1) Match with diameter of outdoor unit piping.

[Branch pipes] Match with diameter of indoor unit piping.



●Main pipe only

Outdoor unit	Standard liquid-side pipe diameter	Standard gas-side pipe diameter	Increased gas pipe size
CU-P224MX1XP	$\phi 12.7 \times t1.0$	$\phi 25.4 \times t1.2$	$\phi 28.58 \times t1.4$
CU-P280MX1XP		$\phi 28.58 \times t1.2$	$\phi 31.8 \times t1.4$

Minimum capacity of connected indoor units	Max. no. of indoor units
Outdoor unit type	
CU-P224MX1XP	12
CU-P280MX1XP	12

Calculated indoor unit capacity		Indoor unit piping diameter x thickness	
Indoor unit type	Capacity (kW)	Gas side	Liquid side
CS-P22TYPE	2.2	$\phi 12.7 \times t1.0$	$\phi 9.52 \times t1.0$
CS-P28TYPE	2.8		
CS-P45TYPE	4.5		
CS-P56TYPE	5.6		
CS-P71TYPE	7.1	$\phi 15.88 \times t1.0$	$\phi 19.05 \times t1.0$
CS-P80TYPE	8.0		
CS-P112TYPE	11.2		
CS-P140TYPE	14.0		

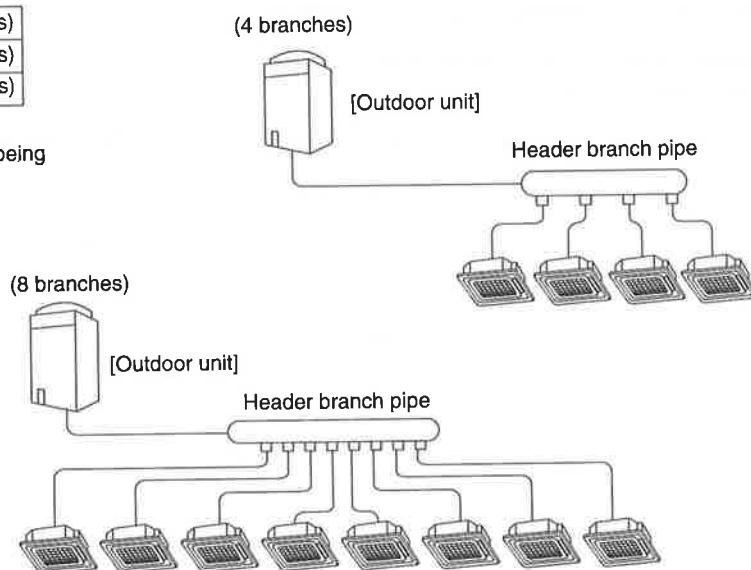
(2)Selecting the branch pipes

(Select the header branch pipes on the basis of the number of indoor units.)

4 units or less	CZ-04PHKV3(4 branches)
5 - 6 units	CZ-06PHKV3(6 branches)
7 - 8 units	CZ-08PHKV3(8 branches)

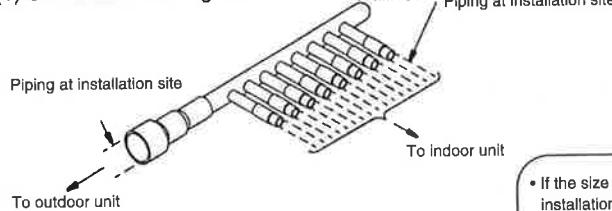
NOTE:

Attach a stopper pipe to branches which are not being used.

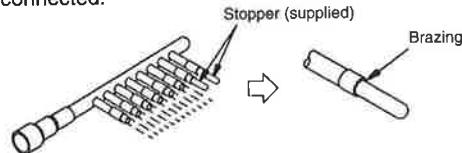
**(2)Installation procedure for header branch piping**

- (1) Connection of the gas side branch piping
 (2) Connection of the liquid side branch piping

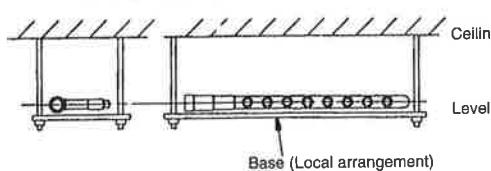
(1) Connection of the gas side branch piping



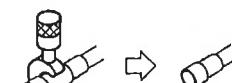
- 1) Attach stoppers to the places which are not to be connected.



- 2) Place the unit on the base and make sure that the installation location is level.

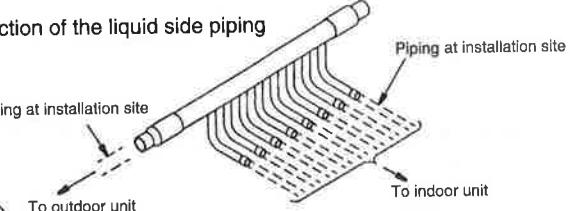


- If the size of the pipe at the installation site does not match the branch size, use a pipe cutter to cut the joint as shown below, or use an adapter socket.

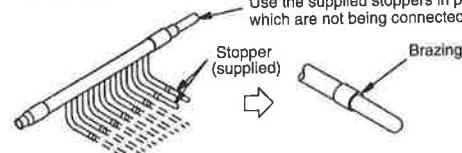


- If using the adapter socket at the gas branch pipe inlet, cut the joint to a diameter of $\phi 25.4$ mm as shown below and then weld on the adapter socket.

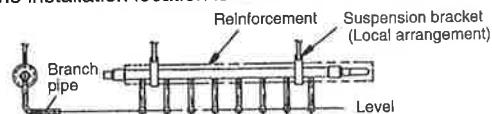
(2) Connection of the liquid side piping



- 1) Attach stoppers to the places which are not to be connected.



- 2) Suspend the unit from the ceiling and make sure that the installation location is level.



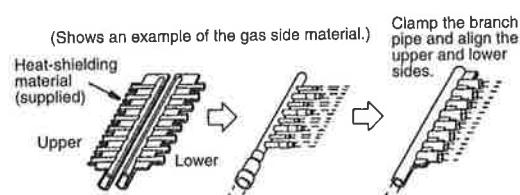
- Install so that the pipes point downward as shown in the illustration.
- Install after attaching insulation material to the suspension brackets.

■Heat insulating procedure

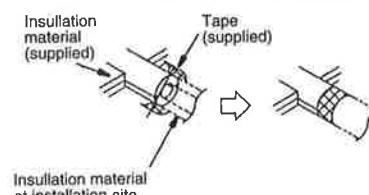
Insulate the branch pipes on the gas side and liquid side against heat.

NOTE: Use an insulation material that can withstand heat of 120°C on the gas side.

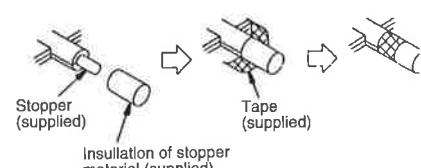
- 1) Insulate the gas side and liquid side header with the heat insulating material.



- 2) Use tape to seal the joints between the insulating material and the insulating material already at the installation site.



- 3) Attach insulation material to the stopper installation locations and secure it with tape.



④ Combination piping method

• Selecting the refrigerant piping and branch piping

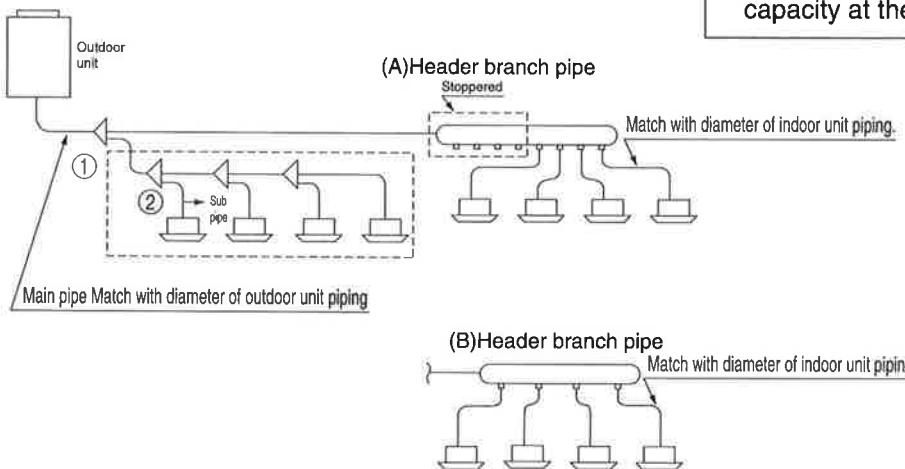
When using the combination method, be sure to select starting from the linebranch pipe.

(1)The first branch pipe

Be sure to use a line branch pipe.

(2)For other branch pipes except for the first branch pipe, use either line branch pipes or header branch pipes, depending on the desired application.

Determine by calculating the total indoor unit capacity at the downstream side.



• Selecting the line branch pipes and main and sub branch pipe diameters

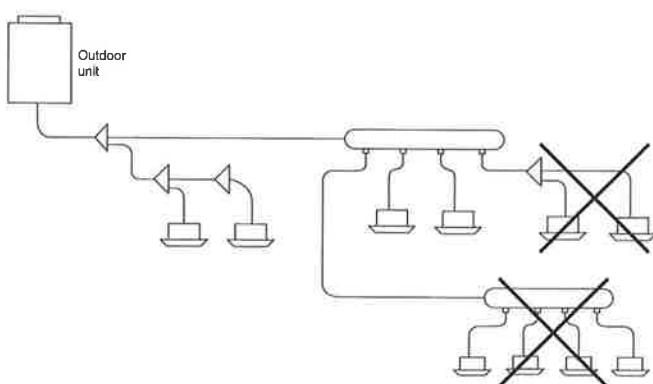
Select in the same way as for the selecting of the line branch method.

• Selecting the header branch pipes and sub branch pipe diameters

Select in the same way as for the selecting of the header branch method.

• Points to note

The following types of combination is not possible.



After branching from a header branch, it is not possible to make further branches using either line branch pipes or header branch pipes.

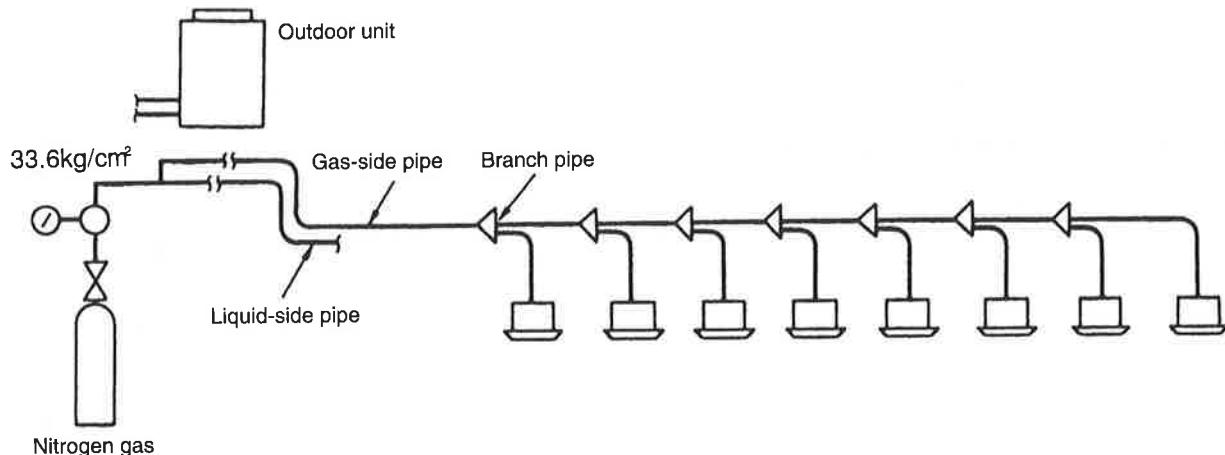
⑤ Points to note regarding refrigerant piping installation

1. Make sure that the indoor unit and outdoor unit systems match when carrying out piping installation.
(If different systems are connected or if piping systems do not match, the system may not run properly and problems may result.)
2. Use phosphorous-free copper connecting pipes (material: C1220T, JISH3300) or the refrigerant pipes.

Pipe diameter class	Material symbol
22.22 mm or less	C1220T-O
25.4 mm or more	C-1220T-1/2H

• Air-tightness tests (gas leak inspection)

Charge the system with nitrogen to check for any gas leaks from welds and flare connections and for any pipes which are not correctly connected.



Use the following working methods and procedures to carry out inspection.

Gradually increase the pressure from both the gas side and liquid side for all systems.

- (1) Step 1: Charge to 0.29 MPa (3.0 kgf/cm²) for 3 minutes or more.
- (2) Step 2: Charge to 1.47 MPa (15.0 kgf/cm²) for 3 minutes or more.

Large leaks can be detected.

- (3) Step 3: Charge to 3.3 MPa (33.6kgf/cm²) for about 24 hours. *

Very small leaks can be detected.

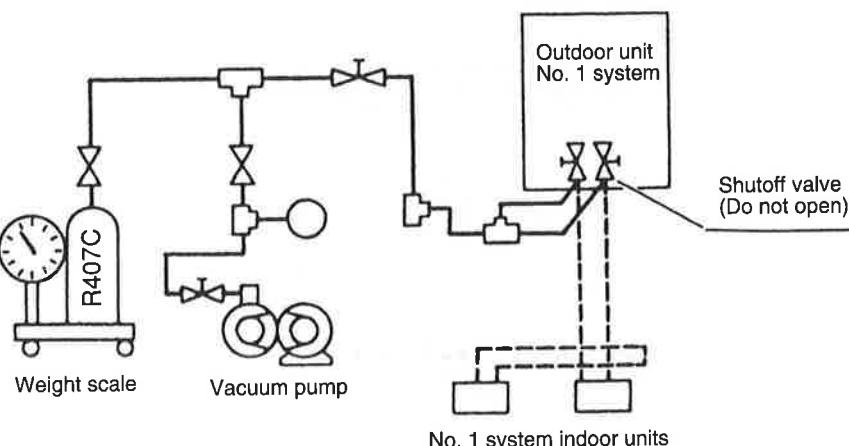
* If the charged time is too short even though the system is charged to 3.3 MPa (33.6kgf/cm²) positive pressure, it will not be possible to detect very small leaks. Be sure to maintain the condition in step 3 for at least 24 hours before checking.

⚠ Caution

Never increase the pressure to more than 3.3 MPa (33.6kgf/cm²).
Use only nitrogen gas. (Be careful to avoid suffocation.)

• Negative pressurization (carry out for each system)

Use a pressure gauge to measure the negative pressurization, and continue until the pressure is 755 mmHg.



2.PIPING WORK OUTLINE

(1) Liquid-side piping connection

Flare the liquid-side pipe, and connect it to the liquid-side service valve. Tighten the flare nut to the torque value given in the table on the right.

Units: N.m (kgf.cm)		
Pipe out. dia.	Torque	Notes
φ 12.7	55 (550)	Liquid-side service valve

(2) Gas-side piping connection

Braise an elbow or socket (procure locally) onto the gas-side service valve, taking note of the direction of the pipe.
※When braising, cool the valve using a wet cloth to ensure that heat is not transferred to the valve body.

(3) Branch pipe connection

Refer to the attached installation manual regarding connection of the branch kit that you have selected (purchased separately).

(4) Piping insulation

Use the insulation material specified on the table on the right to insulate all piping and branches.

※Insulate the piping after you have completed the air-tightness integrity check (described later).

Liquid-side and	Should withstand a temperature of at least 70°C
Gas-side piping	Should withstand a temperature of at least 120°C
Branch pipe	Use the material supplied with the branch

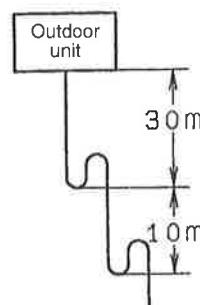
(5) Points of caution regarding piping installation

When braising:

After remove all dirt and dust, and braise under a stream of nitrogen gas (to prevent oxidization scale from forming inside the piping).

When the height difference between indoor and outdoor units exceeds 30 m:

When the height difference between indoor and outdoor units will exceed 30 m, an oil trap must be installed on the gas suction pipe (refer to the diagram on the right). Install one oil trap at a distance of 30 m from the outdoor unit, and at 10 m intervals thereafter.

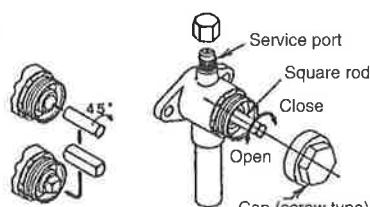


Service valve operation (gas side)

- Remove the cap, and turn the square rod with a monkey wrench to open and close it.
- To fully open or close the valve, rotate the square rod until it stops.

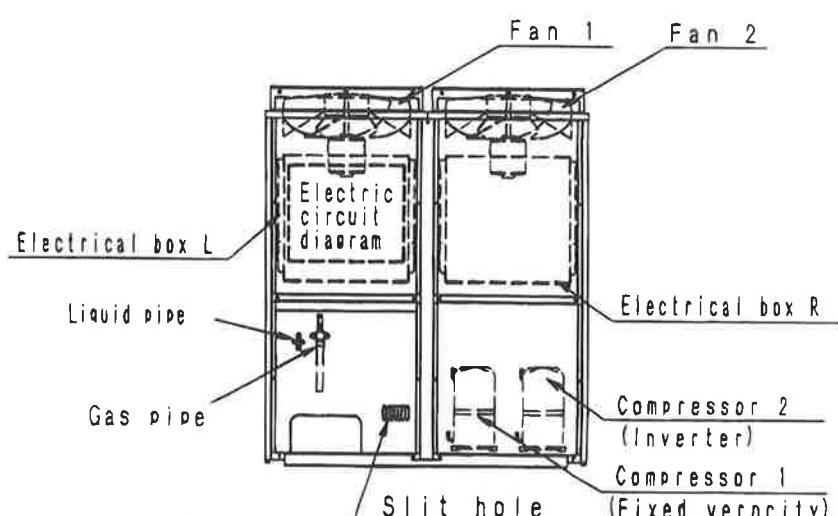
When fully open:

- After inserting the square rod to the rear as described in the outline below, and replace the cap in its original position.
- (1) Pull out the square rod.
- (2) Turn 45 degrees.
- (3) Insert the square rod to the rear once more.

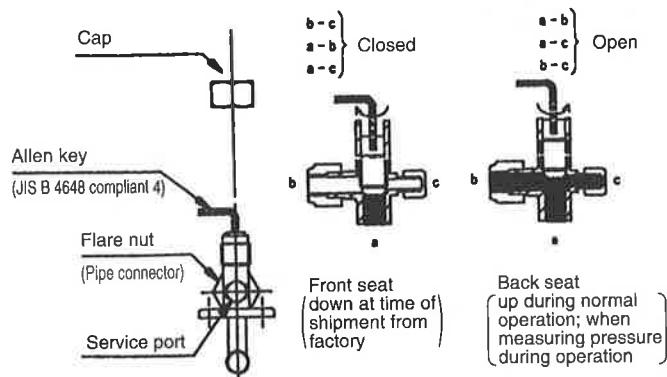


Principle parts are in the locations shown in the diagram below. After removing the panel, attach the outside cover panel so that the panel compartment labels are aligned as shown in the diagram below.

※If you do not install the external cover panels in the correctly, the internal parts may not function correctly.



- (liquid side)
<Pipe diameter 12.7 mm>

**NOTE**

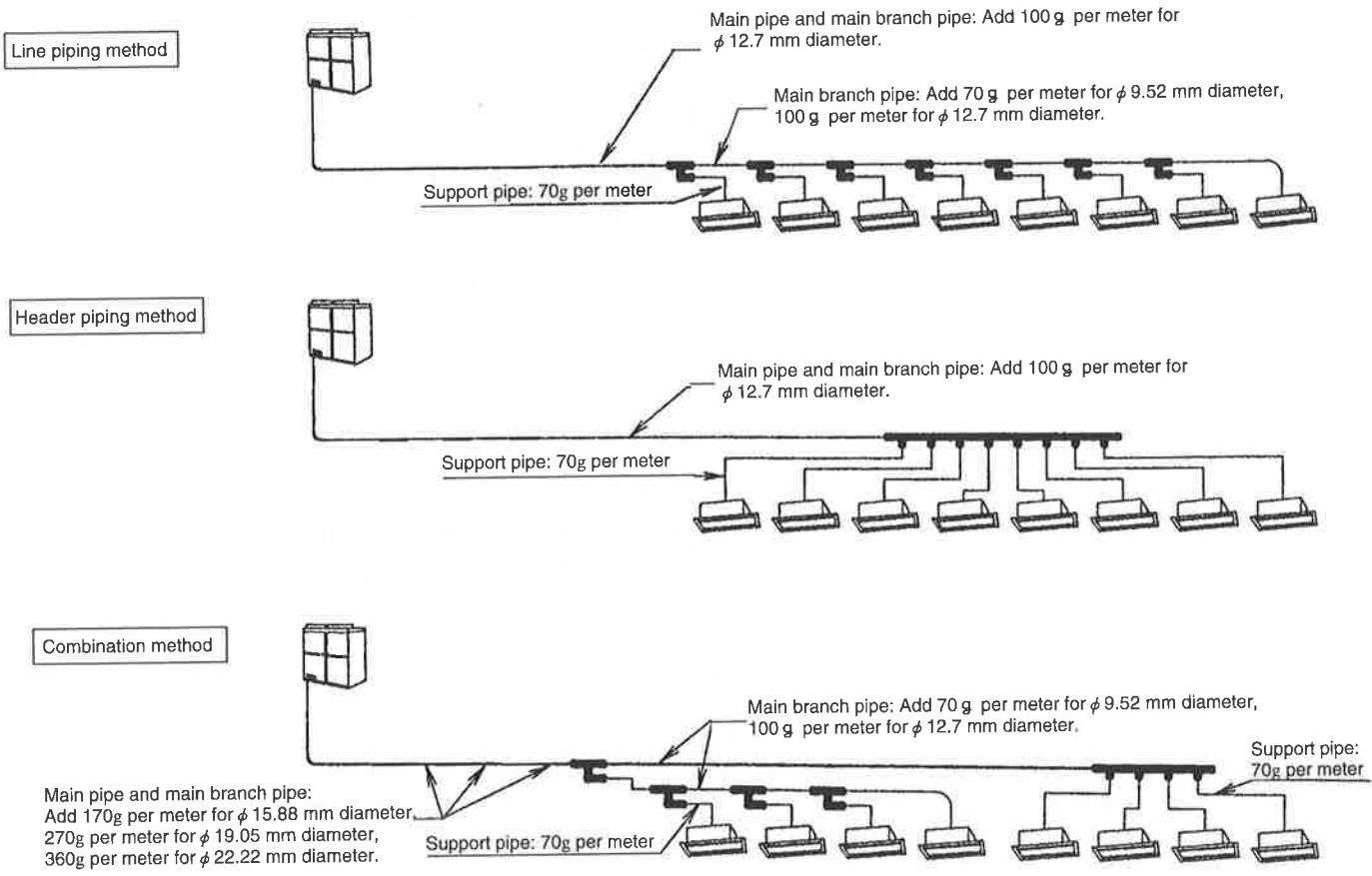
After installation is complete, tighten the cap securely. (Otherwise gas leaks will occur.)

3.ADDITIONAL REFRIGERANT CHARGING AMOUNT

Refer to the table below to calculate the refrigerant additional charging amount based to the liquid side pipe diameter and the actual pipe length.

Liquid side pipe diameter	$\phi 9.52$ (3/8")	$\phi 12.7$ (1/2")
Refrigerant additional charging amount per meter of pipe	70g	100g

- Example of refrigerant additional charging



4.CORRECTION OF COOLING AND HEATING CAPACITY

- Calculate the length of pipe for each indoor unit, and then use this length to make the capacity correction according to the bellow figure.
- Calculation method for Cooling or Heating capacity (Maximum capacity when using in combination with standard indoor units)

Cooling or Heating capacity =

Cooling or Heating capacity calculated from the capacity curve

Rate of change in each capacity

- During cooling and heating, set the pipe length switch (on outdoor unit printed circuit board) in accordance with the pipe used. The rate of change in capacity at maximum operating load under standard running conditions will then be displayed for a system incorporating standard indoor units.

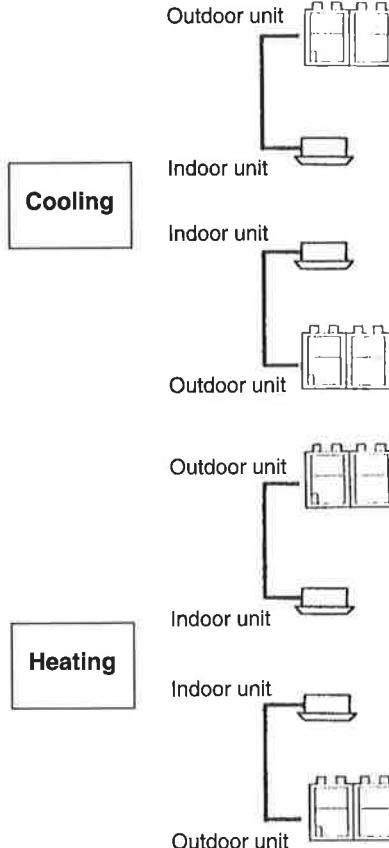
- If the equivalent pipe length is 90 m or more, the main pipe at the gas side (from outdoor unit to first branch pipe) must be one size larger in diameter than normal.

Equivalent pipe length Pipe diameter (mm)	Type		Equivalent length (Overall pipe length) = Actual pipe length + No. of elbows x (Equivalent length of lower elbow) + Oil trap x (Equivalent length of lower oil trap)	
	Elbow	(Units: mm)	Oil trap	(Units: mm)
9.52		0.18		1.3
12.70		0.20		1.5
15.88		0.25		2.0
19.05		0.35		2.4
22.22		0.40		3.0
25.40		0.45		3.4
28.58		0.50		3.7
31.80		0.55		4.0
38.10		0.65		4.8
44.50		0.80		5.9

- In order to maintain the ideal level of performance for the equipment, the refrigerant piping used should be of the specified diameter.

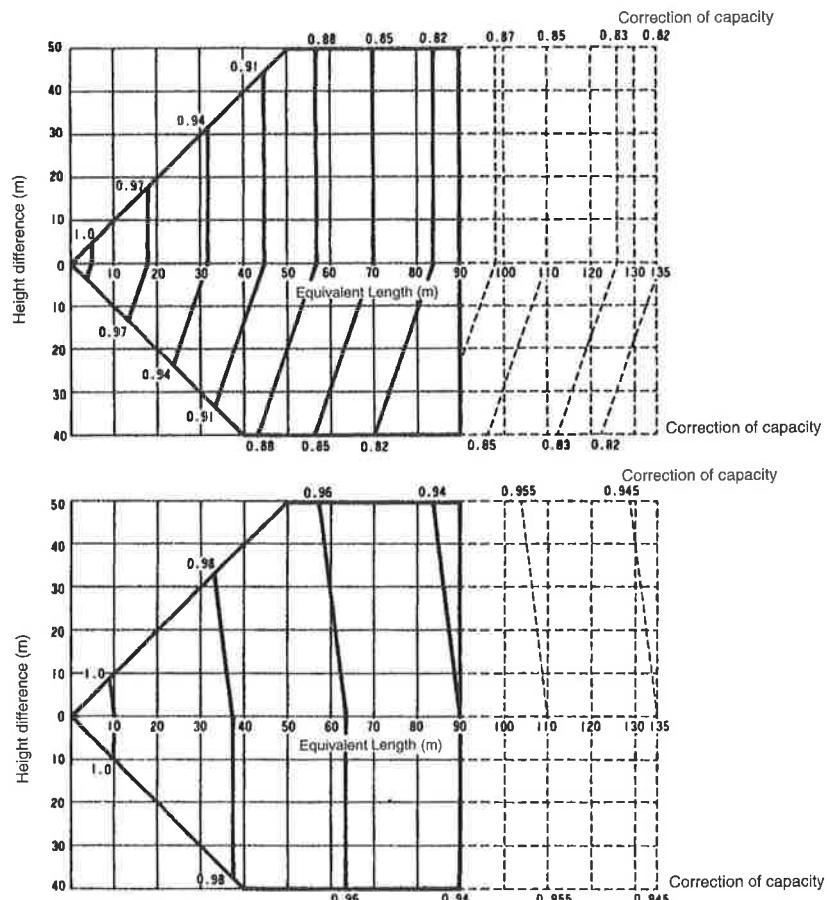
- One oil trap is required each 10 meters when the height difference is 30 meters or more. (gas side only)

•Rate of change in capacity according to the pipe length



●Main pipe

Outdoor unit capacity	Gas side	Size-up diameter
CU-P224MX1XP	φ25.4	φ28.58
CU-P280MX1XP	φ28.58	φ31.80



※The broken lines indicate the capacity correction when the equivalent length of the branch pipe is 30 m and the main gas-side pipe is one size larger.

•If the main gas-side pipe (the section from the outdoor unit to the first branch) is one size larger, calculate the overall equivalent length from the following formula to adjust the capacity from that shown in the graph.

$$\text{Overall effective length} = (\text{Main pipe equivalent length}) \times 0.5 + (\text{Branch pipe equivalent length})$$

5.SAFETY PRECAUTIONS TO AVOID REFRIGERANT GAS LEAKS

The rooms in which the air conditioners installed must be prepared so that even if refrigerant gas should leak, the concentration of leaked gas does not reach the maximum permissible concentration.

1.The R407C refrigerant gas which is used in the air conditioners is not toxic or inflammable. However, it is not the same as air, so that if large quantities of this gas should happen to leak into a room, it may interfere with normal breathing and cause discomfort to the occupants of the room. As a consequence, it is necessary to check the concentration of the gas if it should happen to leak.

- If the leak is coming from an indoor unit, check that the concentration of gas in that room will not exceed the maximum permissible concentration, even if all refrigerant should leak out from that system.
- If the concentration has reached the maximum permissible concentration, doors to neighboring rooms must be opened, or ventilation equipment which is activated by means of gas leak sensors must be installed in the room.

※The maximum permissible concentration is
the concentration at which urgent measures
can be taken without any obstacles.

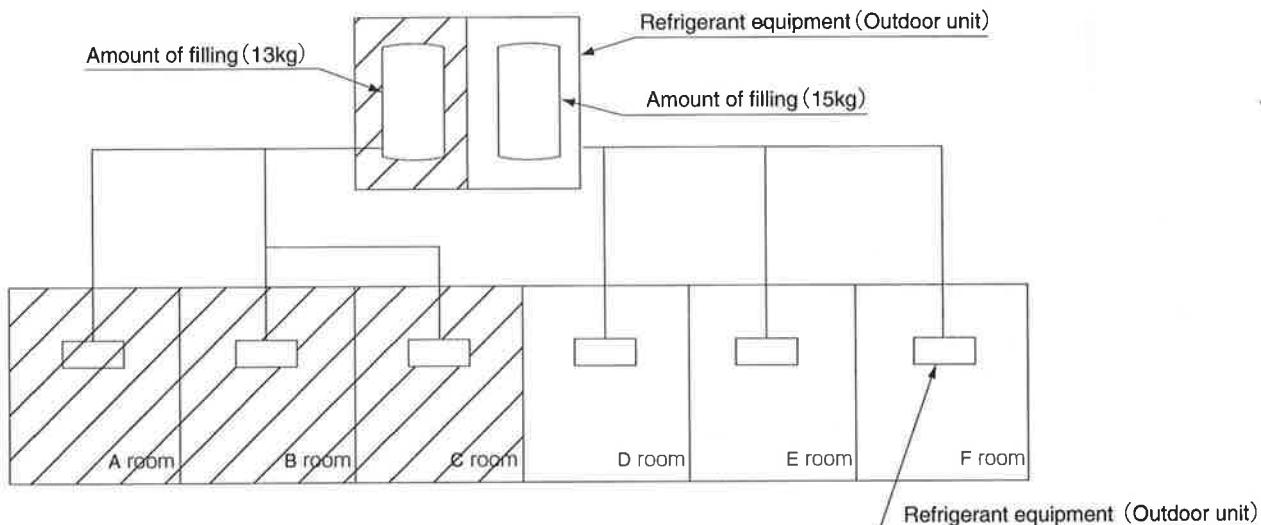
2.Checking of the maximum permissible
concentration depends on the following.

$$\frac{\text{Total charging amount in the system(kg)}}{\text{Minimum volume of the room where the air conditioner is located}} \leq \text{Maximum permissible concentration(kg/m}^3)$$

· The From R407C maximum permissible concentration is 0.31 kg/m³

The basic method of calculation is given in the KHK S 0010 "Installation Standards for Refrigerant Air Conditioners" issued by the Japan High-pressure Gas Safety Association.

3. 3-1 In the refrigerant equipment that is divided in two refrigerant systems or more and of each is independent, the amount of the refrigerant filling gas at each refrigerant equipment is basic of the calculation.



For the amount of the filling gas of this example,

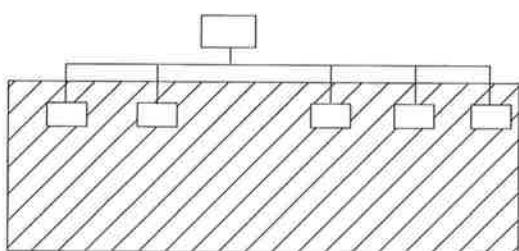
The amount of the leakage refrigerant gas to ①A, B or C room is 13kg respectively.

The amount of the leakage refrigerant gas to ②D, E or F room is 15kg respectively.

3-2 The standard of the minimum room size depends on the following.

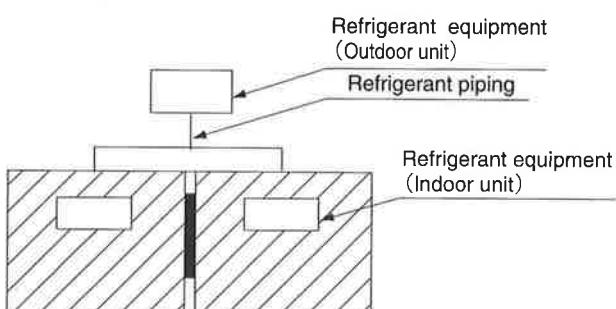
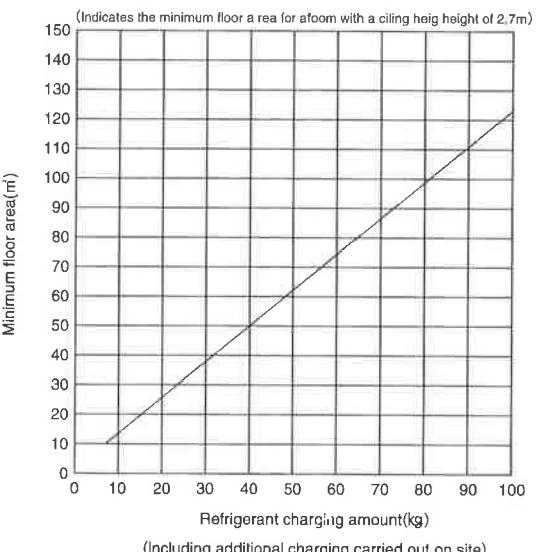
■ The following graph gives a guide to the minium floor area with respect to refrigerant volume.

(1) When there is no partition between
(The part shown in □ is an object.)



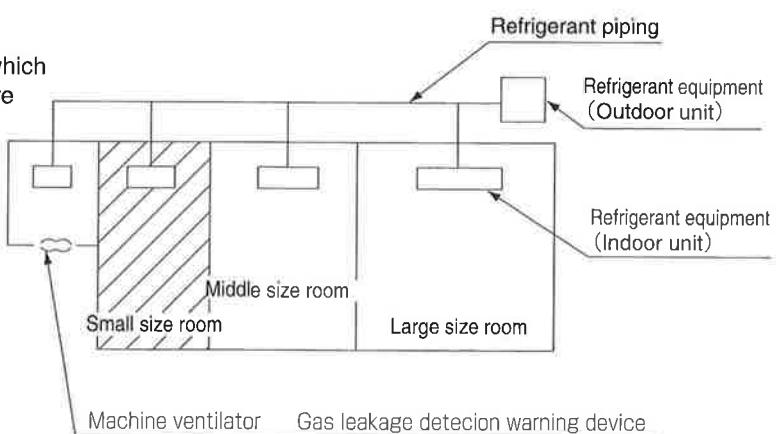
(2)When there is an effective opening to the ventilation of the leaking refrigerant gas in the partition between this room and the next room

(Where there is an opening without a door or where there are openings above and below the door which are each equipment in size to 0.15% or more of the floor area.)



(3) When the refrigerant equipment (Indoor unit) is installed in each room partitioned between and they are connected by the refrigerant piping,
Naturally, the smallest room is the object.

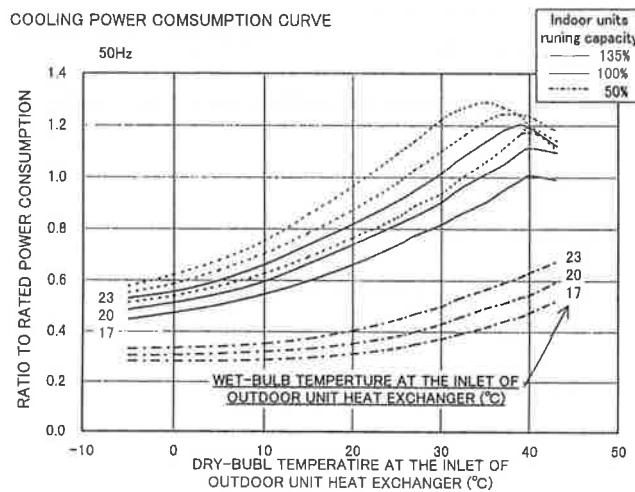
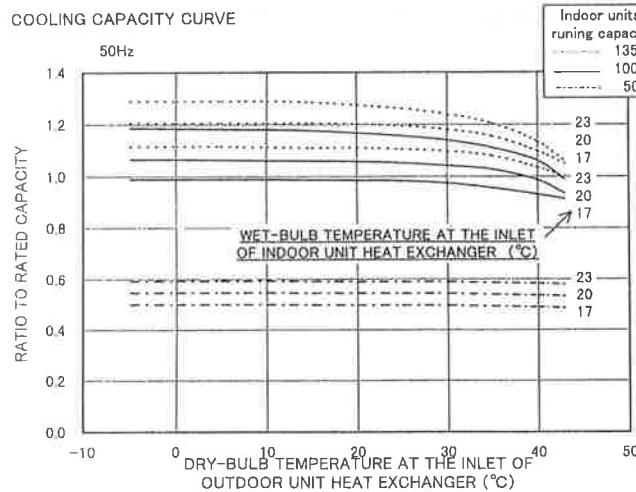
But, when you install the gas leakage detection warning equipment and the machine ventilator which synchronizes with this in the smallest room where exceed the permissible concentration, the next smaller room is the object.



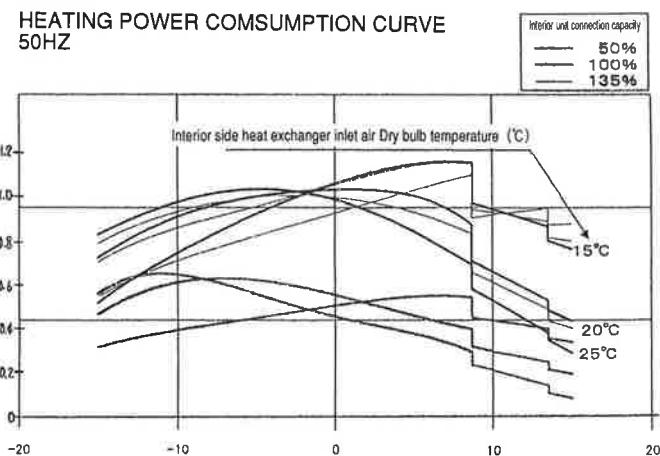
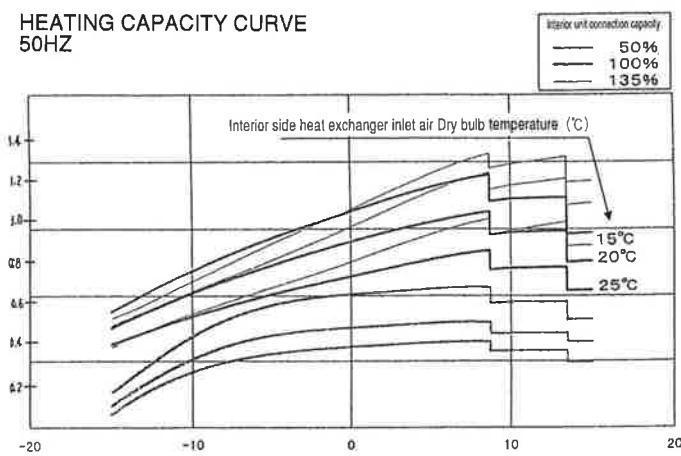
10 PERFORMANCE DATA

1. Capacity curve and power consumption

Cooling capacity curve, cooling power consumption



Heating capacity curve, heating power consumption



■ Cooling and heating performance and power consumption

Product No.	Rated cooling capacity (kW)	Rated cooling power consumption (kW)	Rated heating capacity (kW)	Rated heating power consumption (kW)
CU-P224MX1XP	22.4	9.43	25.0	8.68
CU-P280MX1XP	28.0	11.8	31.5	11.0

• **Table of Capacity correction coefficients for frost build-up during heating (Heat pump type)**

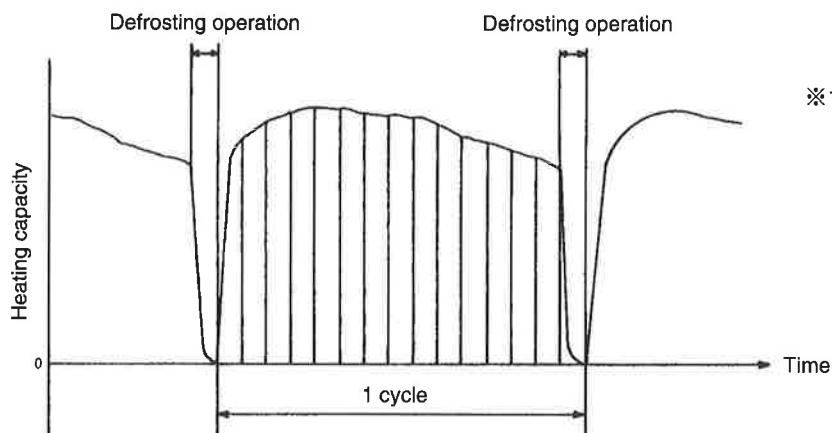
The heating Capacity during frost build-up and during defrosting operation varies in accordance with the outdoor air temperature ($^{\circ}\text{C WB}$) and the amount of frost build-up. Graphs of the heating Capacity for each HP do not include the capacity drop which occurs during frost build-up and during defrosting operation, so that corrections must be made according to the figures in the following table.

• **Table of Capacity correction coefficients for frost build-up during heating**

Outdoor intake air temperature ($^{\circ}\text{C WB}$)	-10	-8	-6	-4	-2	0	1	2	4	6
Correction coefficient	0.93	0.93	0.92	0.89	0.87	0.86	0.87	0.89	0.95	1.0

※1

Integral heating Capacity = (Heating Capacity in specification sheet) x (Correction coefficient) <kW>



※1 The integral heating Capacity is the value that is integrated the heating capacity of the cycle and then converted to the value per hour, as shown in the graph at left.

● System performance

Indoor unit capacity calculation and cooling/heating calculation method

The following procedure can be used to calculate the capacity for each indoor unit required.

- ① Obtain the outdoor unit (system) capacity under given conditions from the outdoor unit capacity curve.
- ② Calculate the total capacity for the indoor units connected to the system.
- ③ Divide the applicable indoor unit capacity by the value in ② to obtain the capacity ratio relative to all units.
- ④ use the system graphs (below) to obtain the coefficient from the point of intersection with ②.

$$\boxed{\text{capacity of required indoor unit}} = \frac{\text{Outdoor unit capacity} \times \text{Applicable indoor unit capacity}}{\text{Total indoor unit capacity}} \times \frac{\text{Coefficient (\%)} \quad \textcircled{1}}{100 \quad \textcircled{4}}$$

(3): Capacity ratio

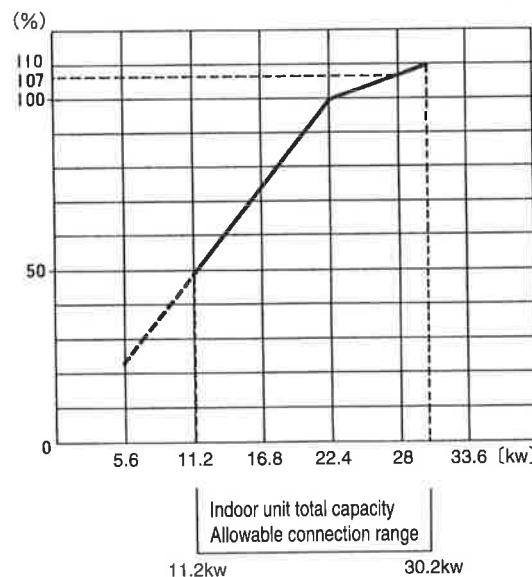
Example of calculation Outdoor unit: CU-P224MX1XP
Indoor unit: CS-P56UM1HPX5

For 5 indoor units, the cooling performance for a single indoor unit using the formula above is:

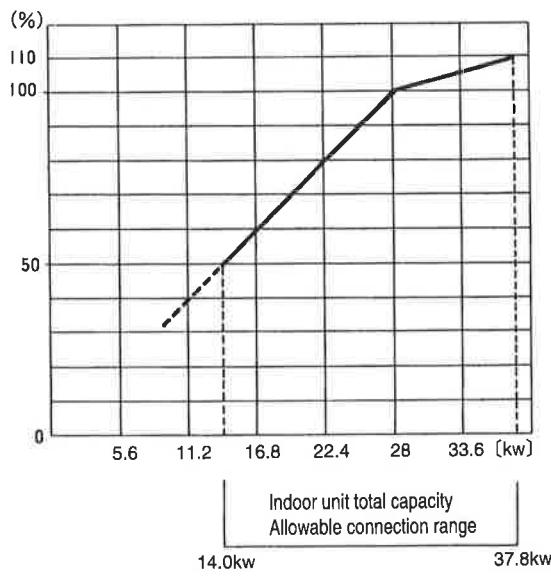
$$22.4 \text{ kW} \times \frac{5.6 \text{ kW}}{5.6 \text{ kW} \times 5 \text{ units}} \times \frac{107(\%)}{100} = 4.8 \text{ kW}$$

● Outdoor unit system capacity curve

• CU-P224MX1XP



• CU-P280MX1XP

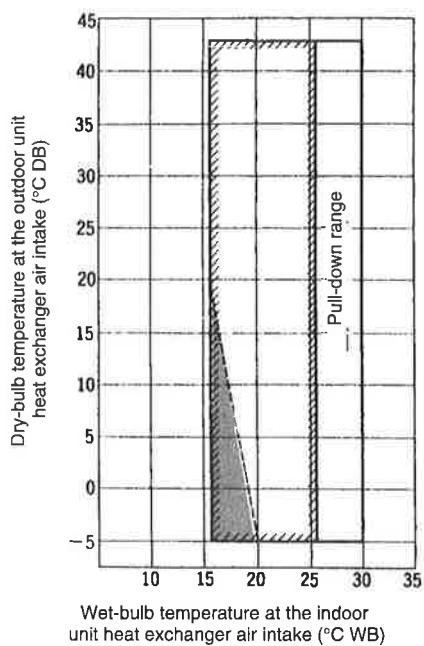


NOTE

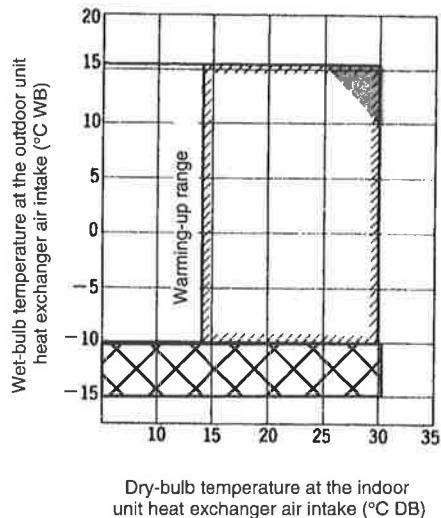
The dotted line shows the results of the above calculation as an example.

2.USABLE TEMPERATURE RANGE

- Usable temperature range for cooling



- Usable temperature range for heating
(Heat pump type)



NOTE:

If the indoor unit usage rate is 25% greater than the capacity of the outdoor units, cooling operation is possible down to outdoor air temperature of -5°C . Furthermore, if the indoor unit usage rate is less than 25%, cooling is possible down to -2°C .

NOTE 1:

During cooling and heating operation, the system requires indoor units with a capacity of 2.5 HP or greater within the black-finished section.

NOTE 2:

The values in the diagram are for effective pipe length of 10m and high/low difference of 0 m.

NOTE 3:

During heating opeation, the system requires indoor units with 70% or less of the outdoor units capacity within the section.

3.PERFORMANCE DATA (OUTDOOR UNIT)

① FAN Performance

UMXR

	MODEL	Fan Speed	Air Volume (m³/min)	Running Current(A) Single Phase			Power Consumption(kW)	Fan Speed r/min
				220V 50Hz	230V 50Hz	240V 50Hz		
8HP	CU-P224MX1XP	High	150	1.68	1.61	1.54	0.36	670
10HP	CU-P280MX1XP	High	150	1.68	1.61	1.54	0.36	670

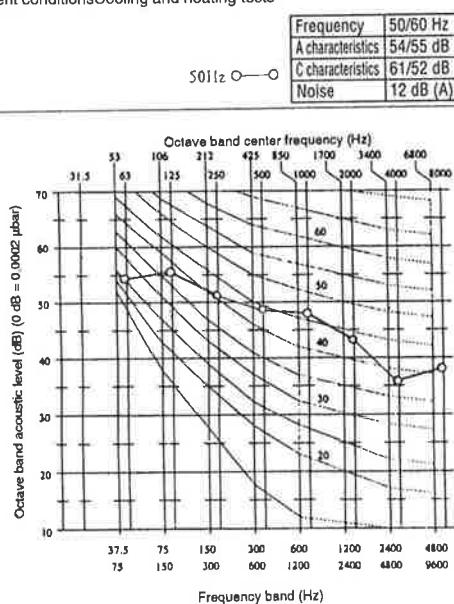
② Sound data

UMXR [OUTDOOR UNIT]

- CU-P224MX1XP,CU-P280MX1XP
- Measurement points 1 meter to the front

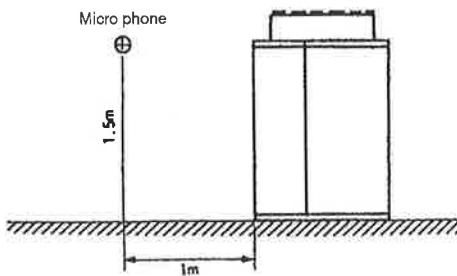
1.5 meters above

Measurement conditions Cooling and heating tests



■ Micro phone Position Testing in a sound proofed

OUTDOOR UNIT



③SPECIFICATION OF POWER SOURCE

UMXR

- Outdoor unit power supply specifications

Model No.	Item	Power supply (transformer) capacity	Power consumption (standard)		Operating current (standard)		Max. operating current		Min. wire thickness (metal sheathed wire) mm	Maximum wire Length m	Leakage breaker (100 mA, 0.1 sec. or less) A	Circuit breaker capacity A	Fuse capacity A
			Cooling	Heating	Cooling	Heating	Cooling	Heating					
		kVA	kW		A	A	mm	m	A	A	A	A	A
CU-P224MX1XP	3N~380V	13.4	9.43	8.68	15.7	14.2	20.4	15.5	6.0	18	30	30	30
	3N~400V	13.6	9.43	8.68	15.1	13.6	19.6	15.1	6.0	18	30	30	30
	3N~415V	13.8	9.43	8.68	14.8	13.4	19.2	15.0	6.0	18	30	30	30
CU-P280MX1XP	3N~380V	16.7	11.8	11.0	19.4	18.2	25.3	20.1	6.0	14	40	40	40
	3N~400V	16.8	11.8	11.0	18.8	17.6	24.2	19.6	6.0	14	40	40	40
	3N~415V	17.1	11.8	11.0	18.4	17.3	23.8	19.5	6.0	14	40	40	40

NOTE

If the Maximum wire Length is higher than the value given, use a wire with a thicker diameter.
(The values given above are for a voltage drop of 1%.)

4.PERFORMANCE DATA (INDOOR UNIT)

①Fan performance

[INDOOR UNIT]

Type	Model	Fan Speed	Air Volume (m ³ /min)	Running Current(A) Single Phase			Power Consumption	Fan Speed rpm
				220V 50Hz	230V 50Hz	240V 50Hz		
one-way cassette	CS-P28DM1HP	High	7.5	0.14	0.14	0.13	0.03	1250
		Mid	6.5	0.10	0.10	0.10	0.028	1120
		Low	5.5	0.09	0.09	0.09	0.026	980
Four-way cassette	CS-P36UM1HP	High	12	0.31	0.30	0.29	0.065	390
		Mid	11	0.24	0.23	0.22	0.05	340
		Low	9	0.17	0.17	0.16	0.03	300
	CS-P45UM1HP	High	12	0.31	0.30	0.29	0.065	390
		Mid	11	0.24	0.23	0.22	0.05	340
		Low	9	0.17	0.17	0.16	0.03	300
	CS-P56UM1HP	High	14	0.31	0.30	0.29	0.065	390
		Mid	12	0.24	0.23	0.22	0.05	340
		Low	10	0.17	0.17	0.16	0.03	300
	CS-P71UM1HP	High	17	0.42	0.40	0.39	0.09	430
		Mid	15	0.35	0.33	0.32	0.07	390
		Low	13	0.29	0.28	0.27	0.06	340
	CS-P80UM1HP	High	20	0.43	0.41	0.39	0.092	450
		Mid	17	0.37	0.34	0.33	0.077	410
		Low	15	0.31	0.27	0.28	0.06	360
	CS-P112UM1HP	High	26	0.71	0.68	0.65	0.15	560
		Mid	22	0.62	0.59	0.57	0.13	500
		Low	19	0.52	0.49	0.47	0.11	420
	CS-P140UM1HP	High	30	0.99	0.95	0.91	0.21	710
		Mid	25	0.85	0.82	0.78	0.18	640
		Low	20	0.66	0.63	0.61	0.14	570
Wall	CS-P22KM1HP	High	13	0.20	0.19	0.19	0.043	1180
		Mid	11	0.16	0.16	0.15	0.035	1090
		Low	9	0.15	0.14	0.13	0.03	990
	CS-P36KM1HP	High	14	0.20	0.19	0.19	0.043	1180
		Mid	12	0.16	0.16	0.15	0.035	1090
		Low	10	0.15	0.14	0.13	0.03	990
	CS-P45KM1HP	High	14	0.20	0.19	0.19	0.043	1180
		Mid	12	0.16	0.16	0.15	0.035	1090
		Low	10	0.15	0.14	0.13	0.03	990
	CS-P56KM1HP	High	18	0.27	0.26	0.25	0.057	1160
		Mid	16	0.21	0.20	0.19	0.045	1050
		Low	13	0.19	0.18	0.18	0.04	940
	CS-P71KM1HP	High	18	0.27	0.26	0.25	0.057	1160
		Mid	16	0.21	0.20	0.19	0.045	1050
		Low	13	0.19	0.18	0.18	0.04	940

	10.PERFORMANCE DATA	
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Fan performance

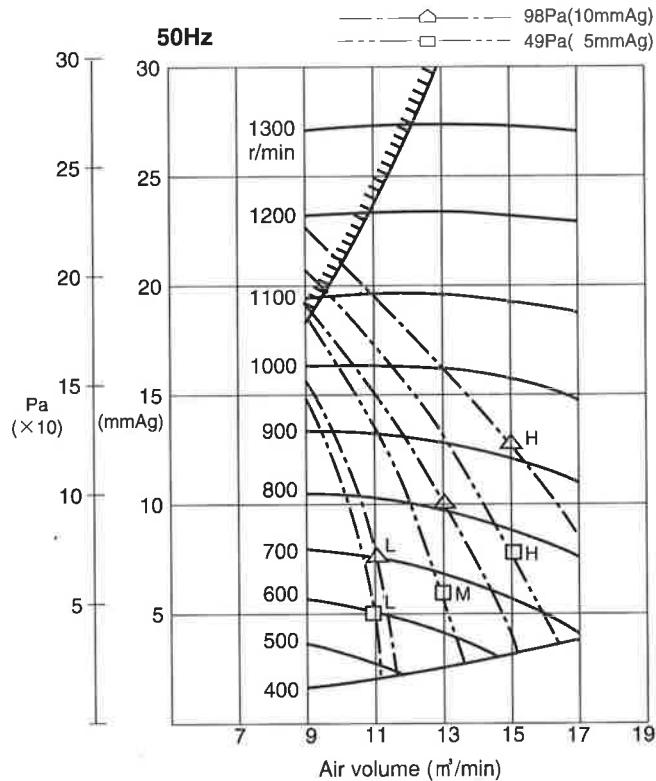
[INDOOR UNIT]

Type	Model	External Static Pressure	Fan Speed	Air Volume (m ³ /min)	Running Current(A)			Power Consumption	Fan Speed
					Single Phase				
Hide-Away	CS-P45EM1HP	7mmAq (69Pa)	High	15	1.04	0.99	0.95	0.22	840
			Mid	13	0.71	0.68	0.65	0.16	740
			Low	11	0.65	0.62	0.59	0.15	640
		10mmAq (98Pa)	High	15	1.04	0.99	0.95	0.22	930
			Mid	13	0.71	0.68	0.65	0.16	820
			Low	11	0.65	0.62	0.59	0.15	700
	CS-P56EM1HP	7mmAq (69Pa)	High	17	1.08	1.03	0.99	0.23	770
			Mid	15	0.85	0.80	0.77	0.18	680
			Low	13	0.76	0.72	0.66	0.17	600
		10mmAq (98Pa)	High	17	1.08	1.03	0.99	0.23	890
			Mid	15	0.85	0.80	0.77	0.18	800
			Low	13	0.76	0.72	0.66	0.17	700
	CS-P71EM1HP	10mmAq (98Pa)	High	20	1.55	1.48	1.42	0.32	960
			Mid	18	1.26	1.29	1.35	0.24	860
			Low	16	1.13	1.15	1.22	0.22	780
		15mmAq (147Pa)	High	20	1.44	1.47	1.55	0.32	1140
			Mid	18	1.30	1.33	1.40	0.26	1040
			Low	16	1.17	1.19	1.26	0.23	930
	CS-P80EM1HP	10mmAq (98Pa)	High	25	1.53	1.46	1.40	0.33	1040
			Mid	22	1.18	1.23	1.27	0.27	930
			Low	19	1.04	1.08	1.11	0.26	810
		15mmAq (147Pa)	High	25	1.32	1.37	1.41	0.32	1210
			Mid	22	1.22	1.26	1.31	0.28	1080
			Low	19	1.06	1.12	1.14	0.27	940
	CS-P112EM1HP	10mmAq (98Pa)	Mid	35	2.10	2.01	1.93	0.44	950
			Mid	30	1.85	1.77	1.70	0.36	810
			Low	25	1.58	1.51	1.45	0.34	700
		15mmAq (147Pa)	High	35	2.18	2.09	2.00	0.45	1130
			Mid	30	1.91	1.83	1.75	0.37	980
			Low	25	1.64	1.57	1.50	0.35	830
	CS-P140EM1HP	10mmAq (98Pa)	Mid	40	2.30	2.20	2.11	0.49	1020
			Mid	35	1.91	1.93	1.80	0.45	900
			Low	30	1.90	1.92	1.80	0.37	790
		15mmAq (147Pa)	High	40	2.28	2.31	2.15	0.52	1190
			Mid	35	1.97	1.99	1.85	0.46	1050
			Low	30	1.96	1.99	1.84	0.38	920

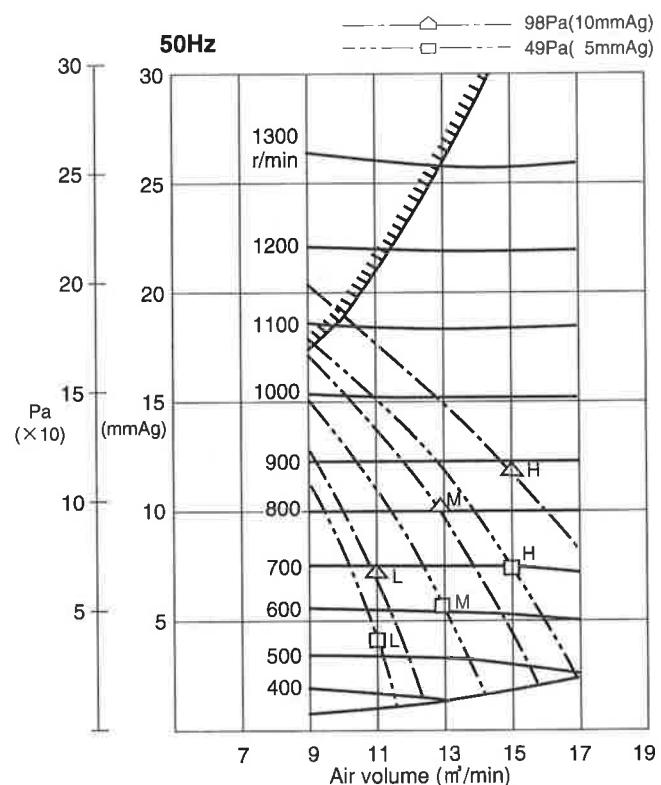
② Fan performance curve

Hide-Away type

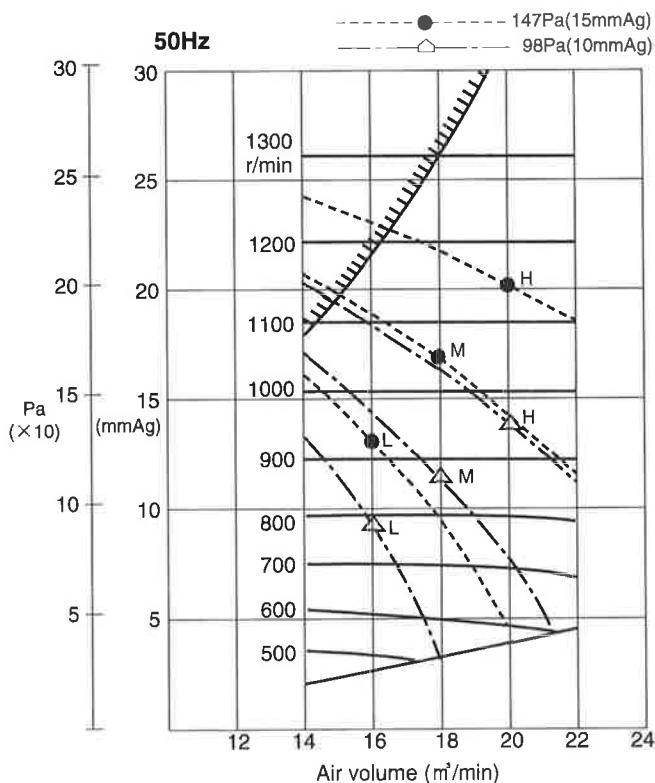
●CS-P45EM1HP



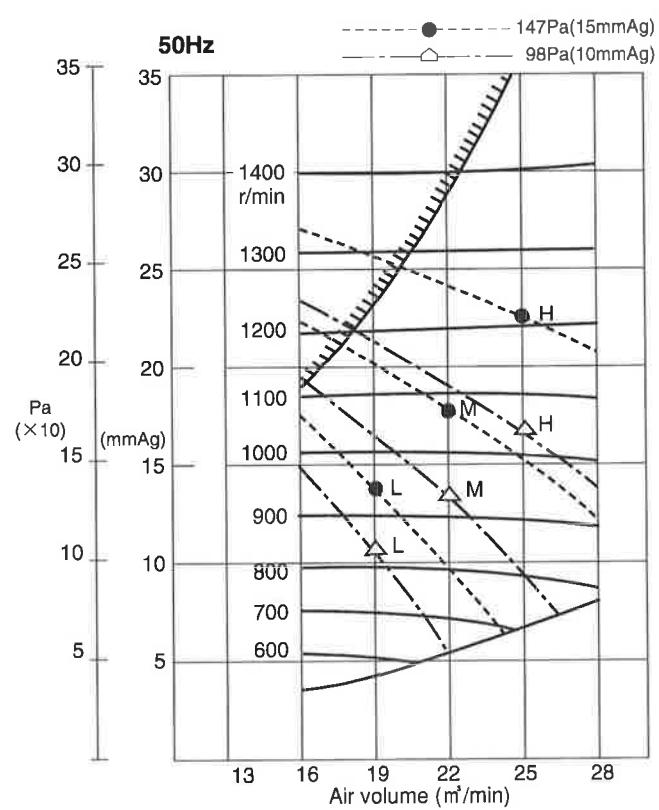
●CS-P56EM1HP



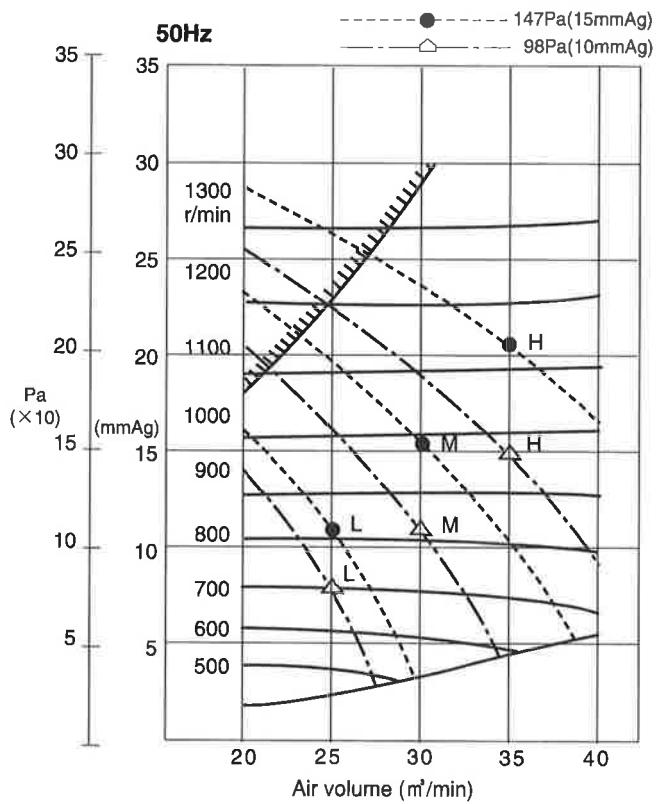
●CS-P71EM1HP



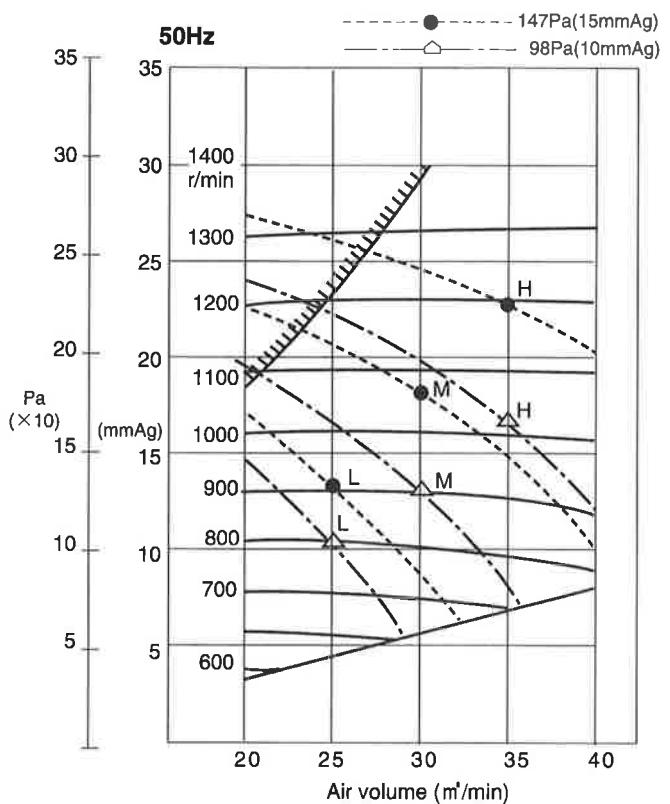
●CS-P80EM1HP



●CS-P112EM1HP



●CS-P140EM1HP



③Reaching distance

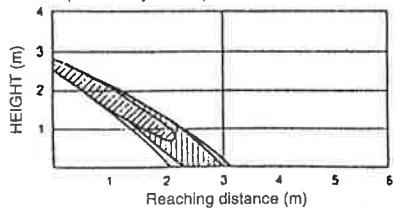
Reaching distance ONE WAY CASSETTE TYPE

●CS-P28DM1HP

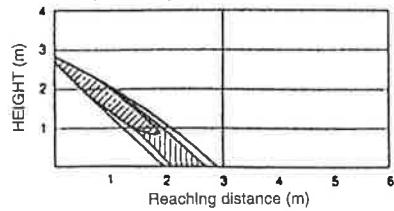
<Cooling>

Conditions: Indoor temperature 27°C
Fan angle 45°
Air outlet height 2.7 m

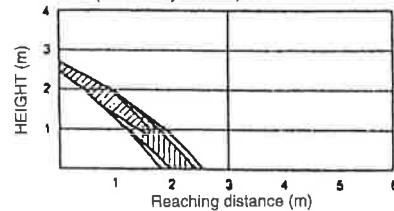
• HI(Air velocity 2.9m/s)



• MED (Air velocity 2.5 m/s)



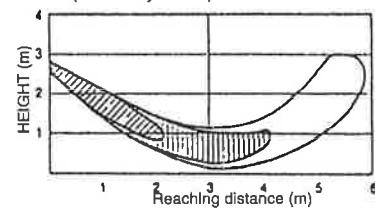
• LOW (Air velocity 2.1 m/s)



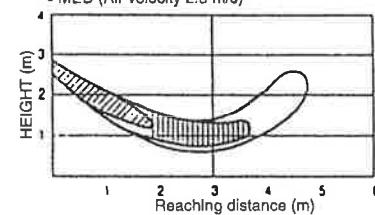
<Heating>

Conditions: Indoor temperature 21°C
Fan angle 40°
Air outlet height 2.7 m

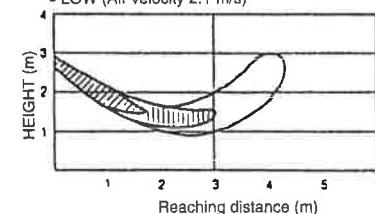
• HI(Air velocity 2.9m/s)

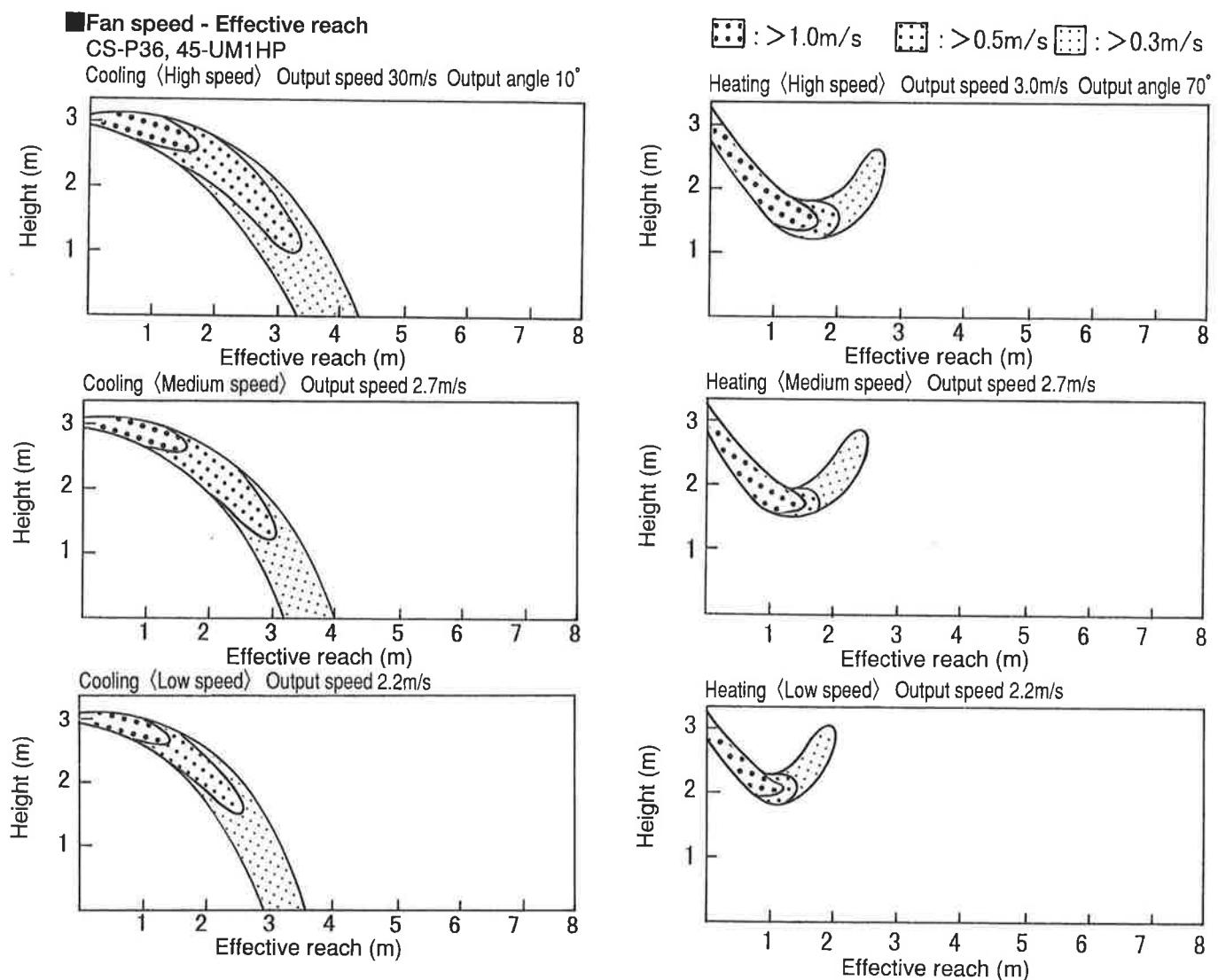


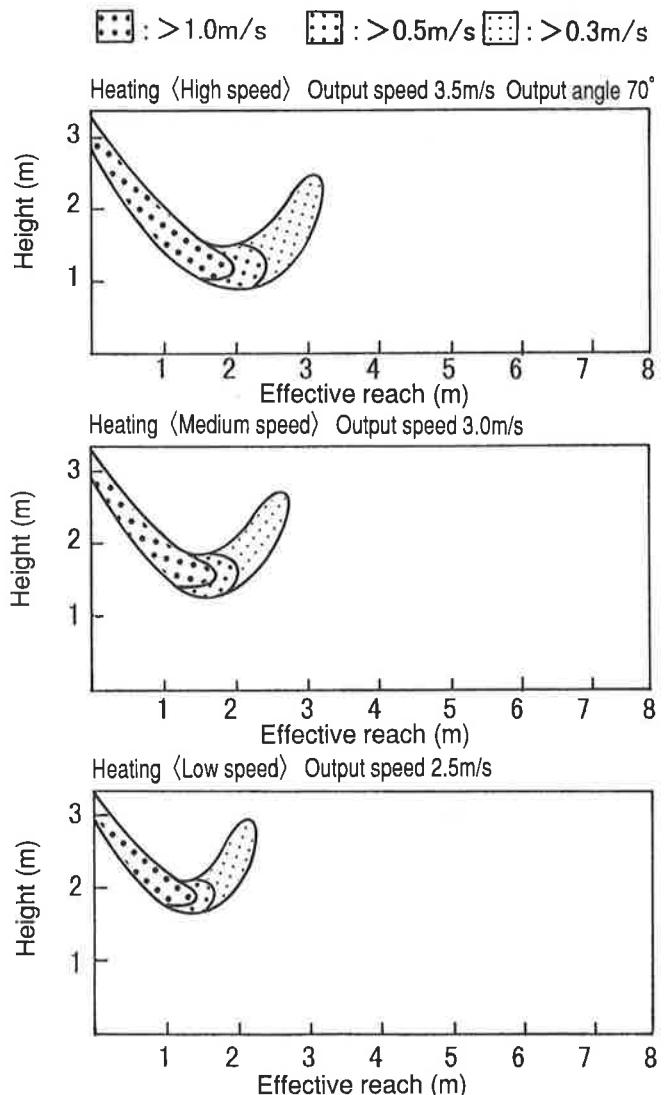
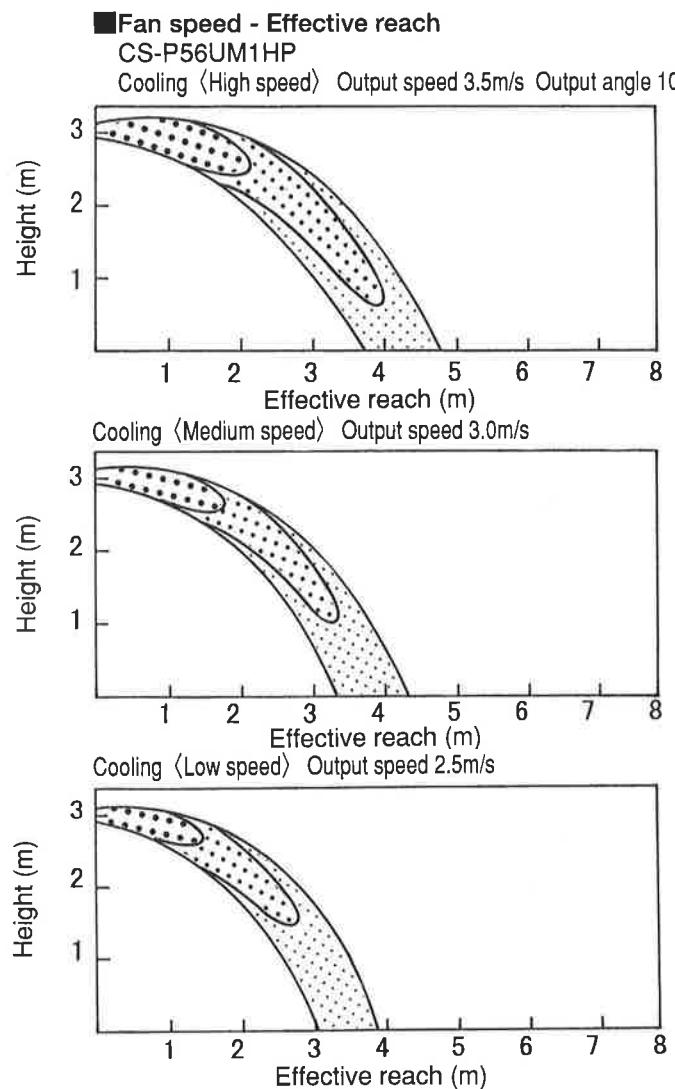
• MED (Air velocity 2.5 m/s)

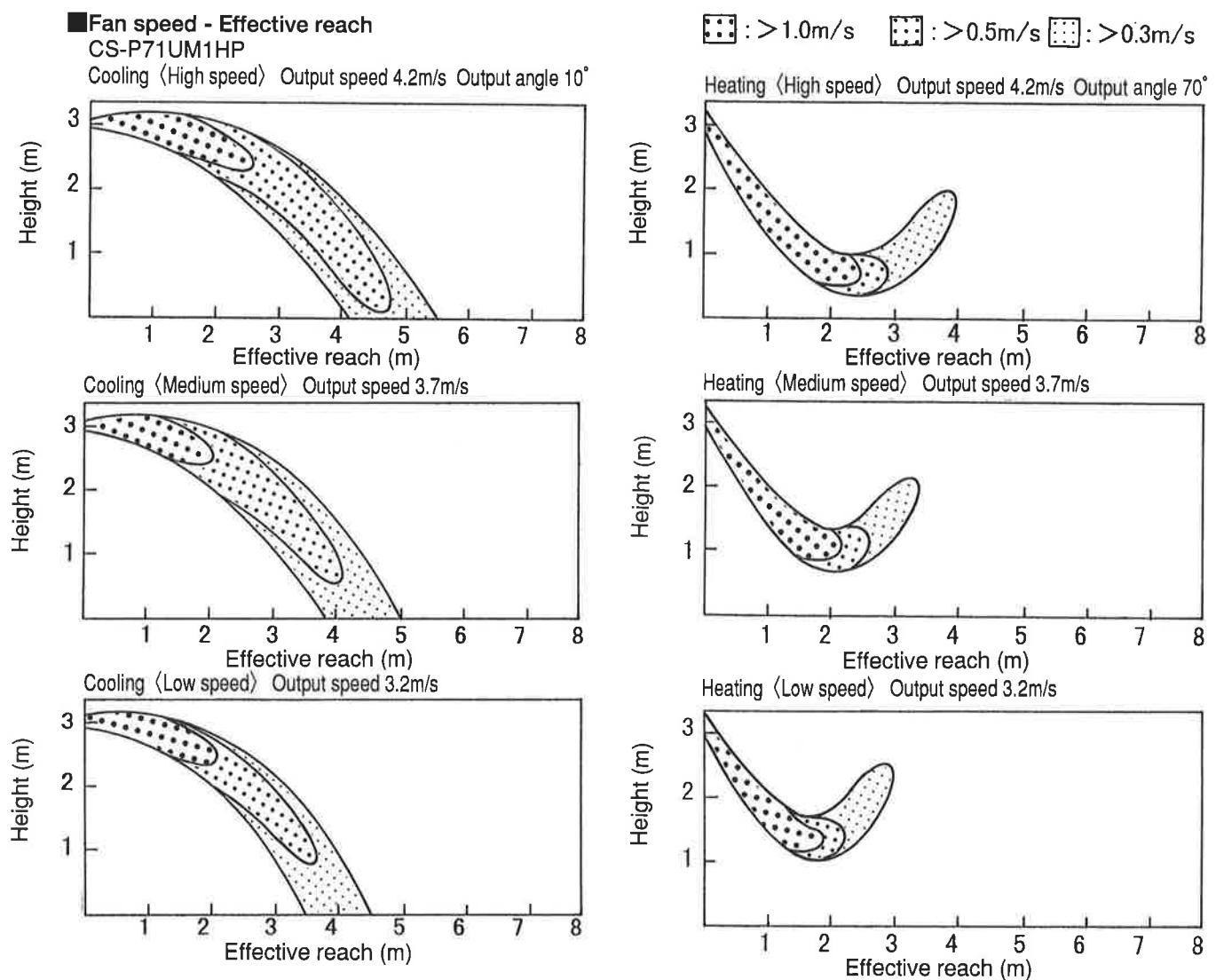


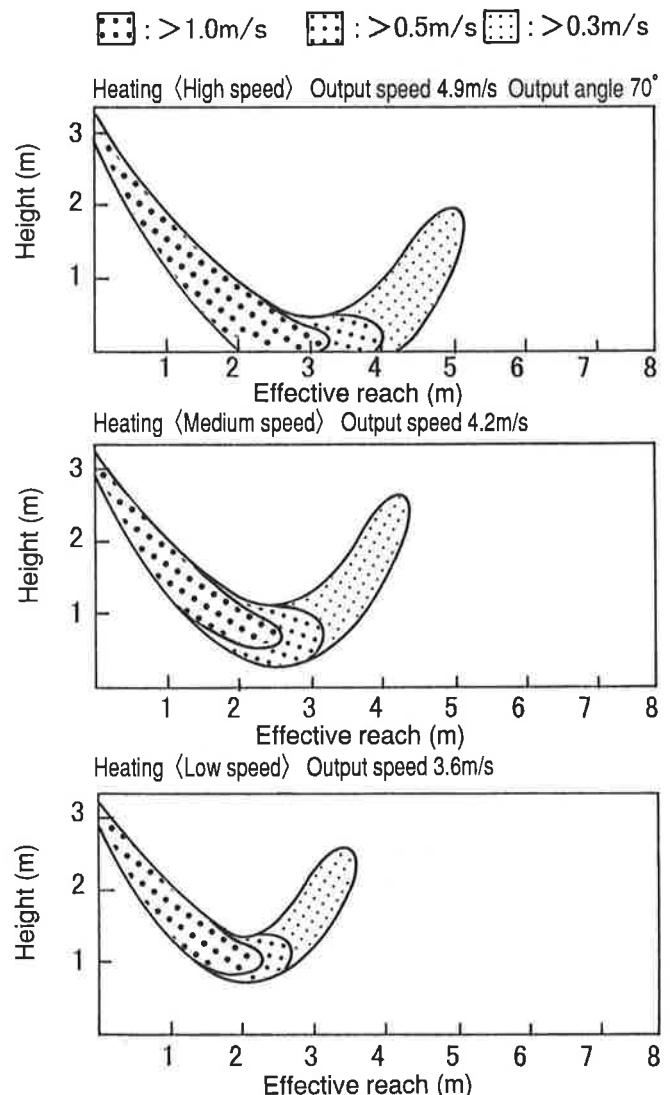
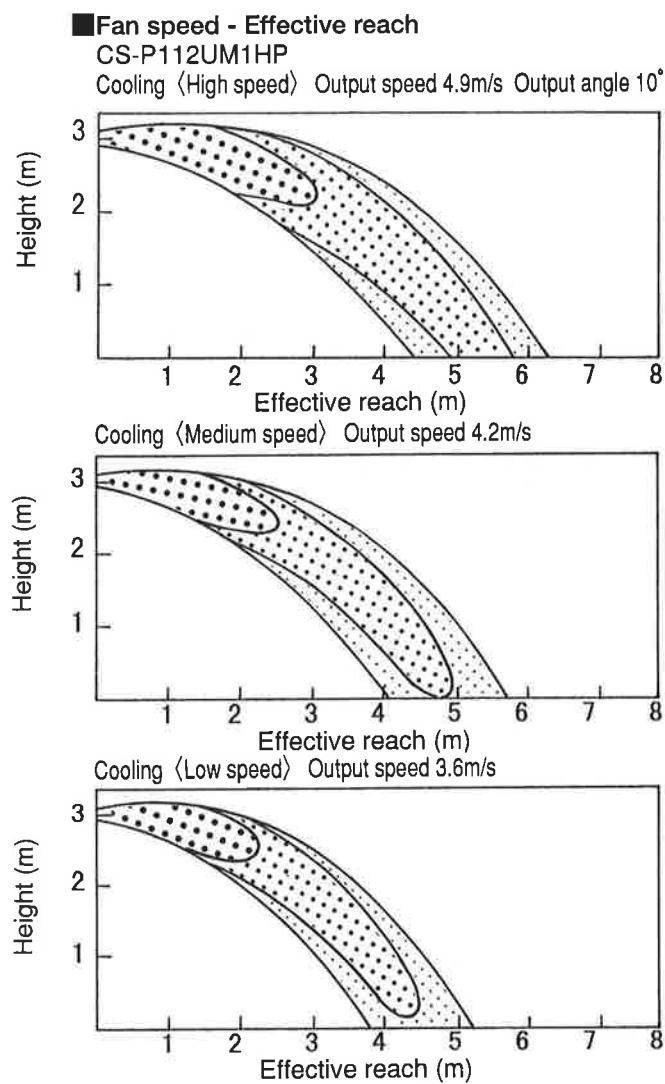
• LOW (Air velocity 2.1 m/s)

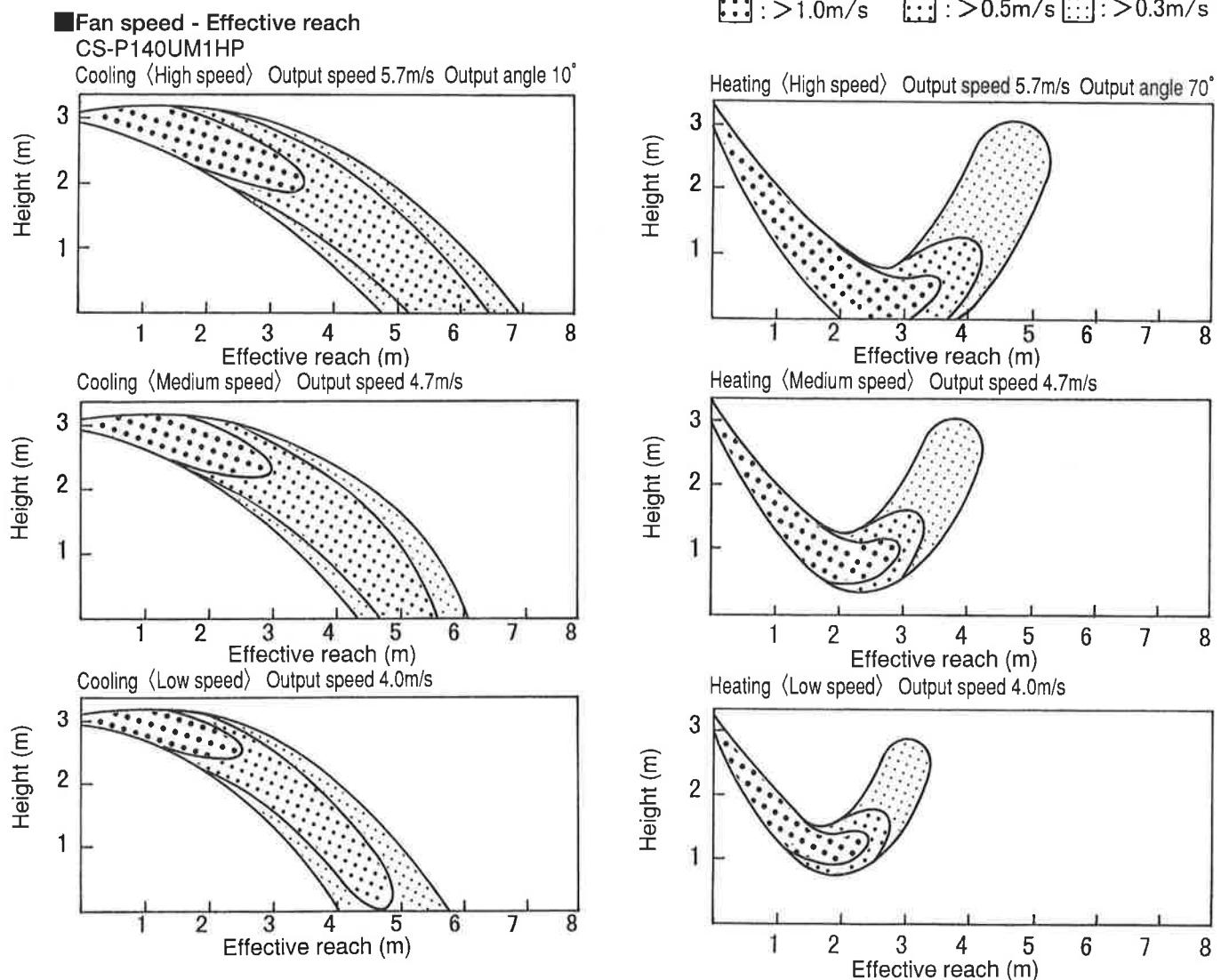




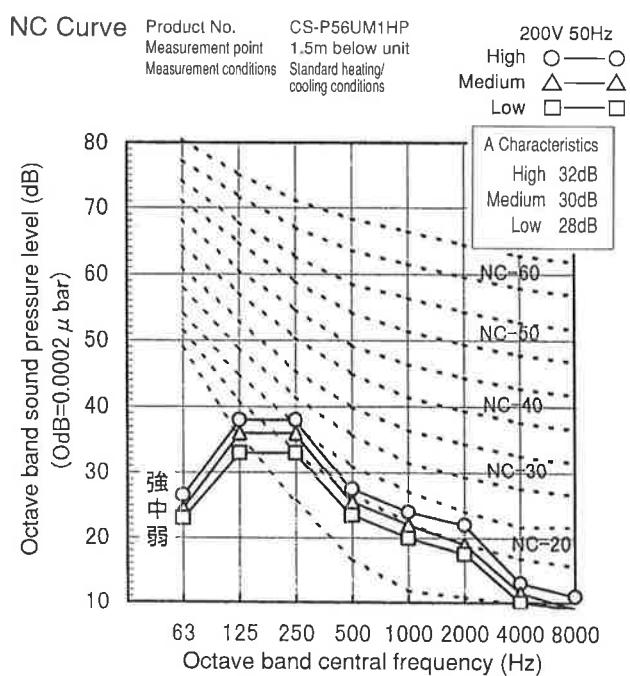
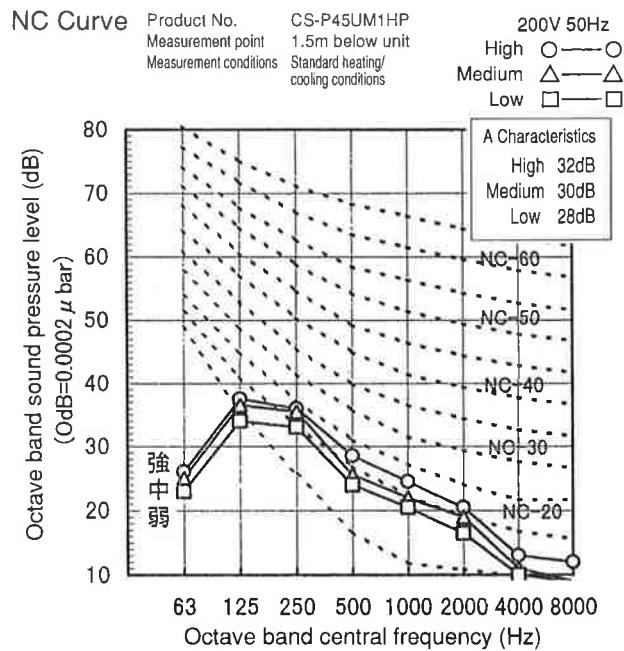
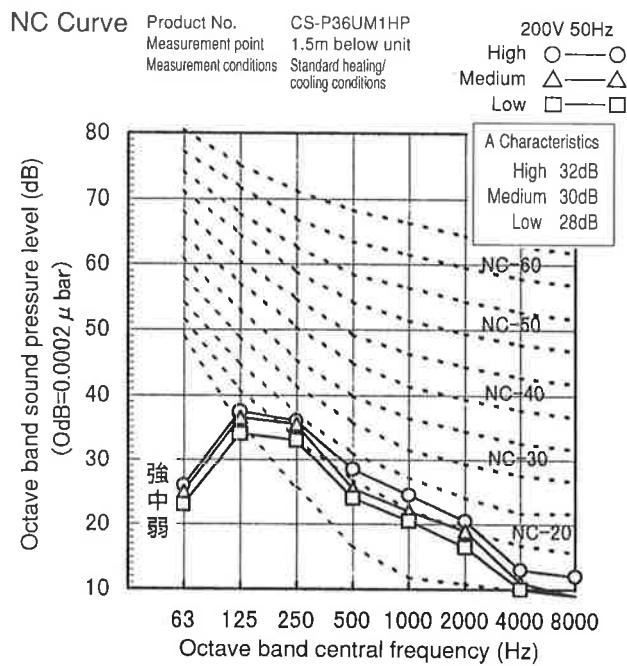




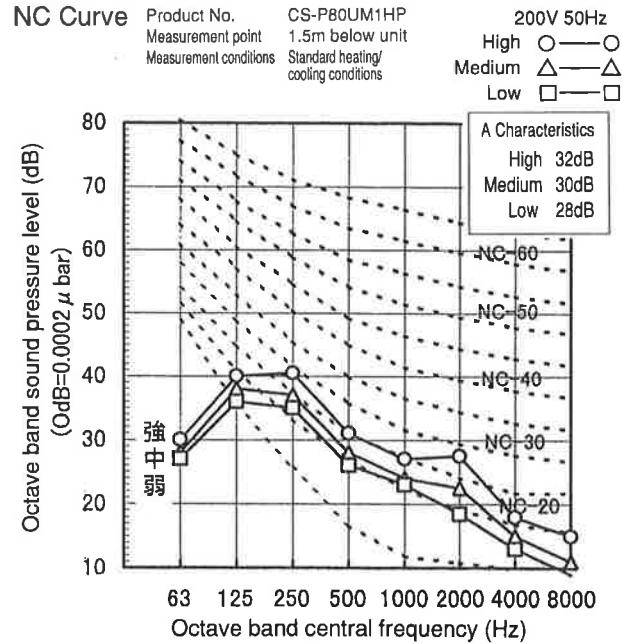
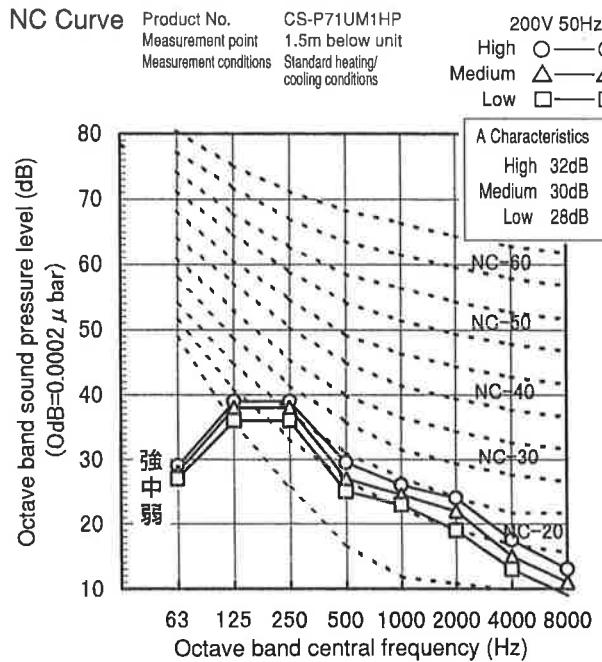


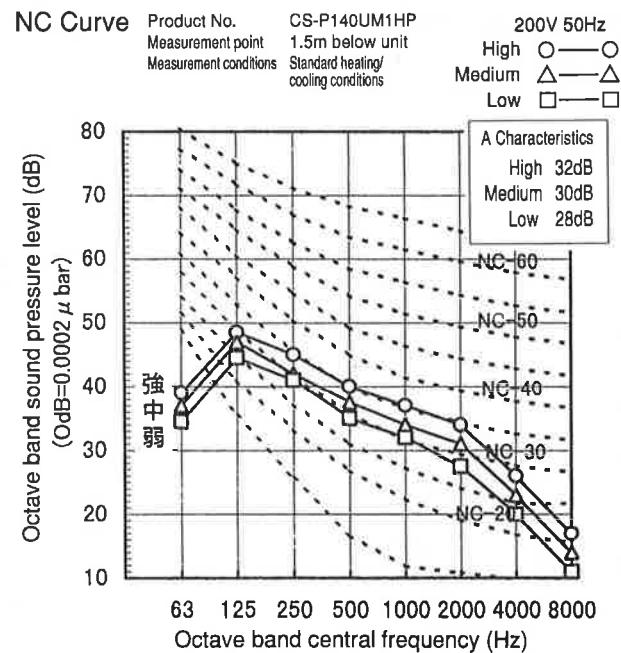
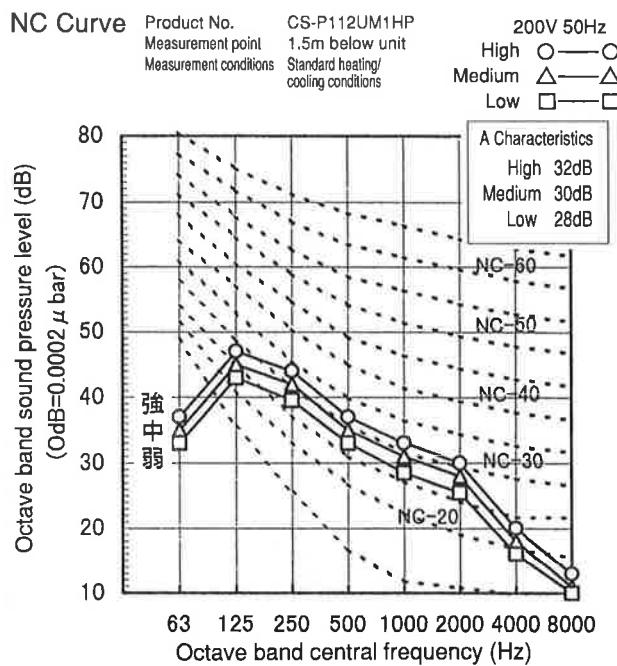


10.PERFORMANCE DATA



10.PERFORMANCE DATA

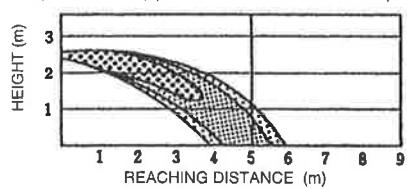




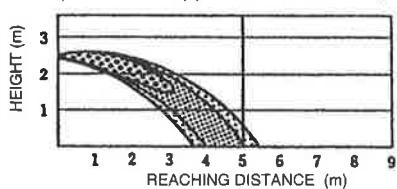
Reaching distance WALL TYPE

■CS-P22KM1HP,CS-P36KM1HP,CS-P45KM1HP

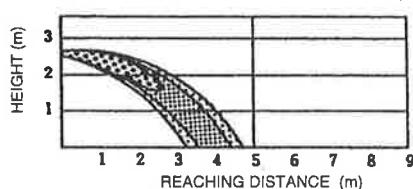
<COOLING> (ANGLE AT OUTLET 0°)
(HIGH SPEED) (VELOCITY AT OUTLET 5.0m/S)



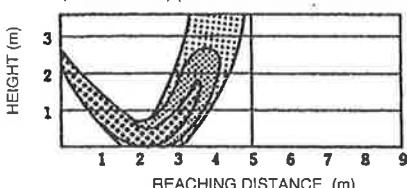
(MIDDLE SPEED) (VELOCITY AT OUTLET 4.0m/S)



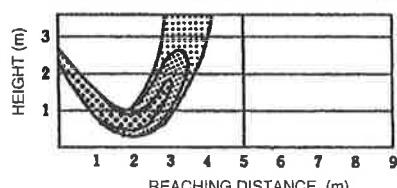
(LOW SPEED) (VELOCITY AT OUTLET 3.4m/S)



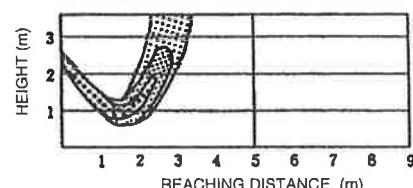
<HEATING> (ANGLE AT OUTLET 34°)
(HIGH SPEED) (VELOCITY AT OUTLET 5.0m/S)



(MIDDLE SPEED) (VELOCITY AT OUTLET 4.0m/S)

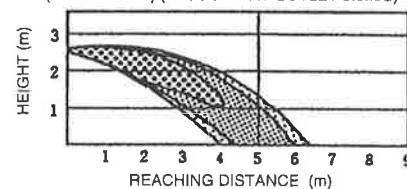


(LOW SPEED) (VELOCITY AT OUTLET 3.4m/S)

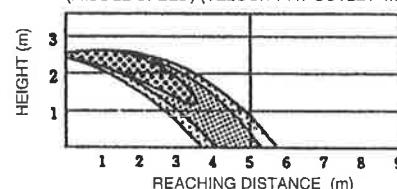


■CS-P56KM1HP,CS-P71KM1HP

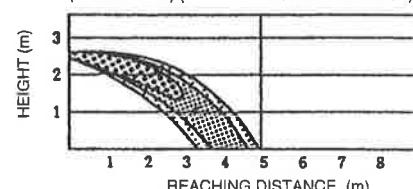
<COOLING> (ANGLE AT OUTLET 0°)
(HIGH SPEED) (VELOCITY AT OUTLET 5.0m/S)



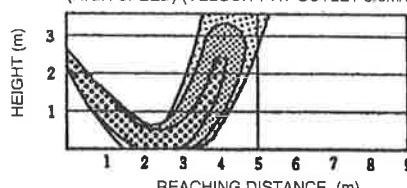
(MIDDLE SPEED) (VELOCITY AT OUTLET 4.0m/S)



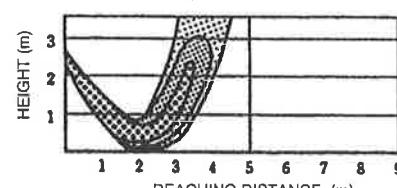
(LOW SPEED) (VELOCITY AT OUTLET 3.4m/S)



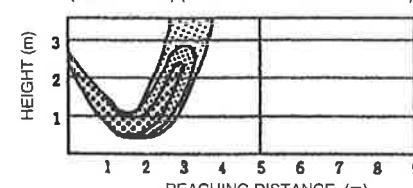
<HEATING> (ANGLE AT OUTLET 34°)
(HIGH SPEED) (VELOCITY AT OUTLET 5.0m/S)



(MIDDLE SPEED) (VELOCITY AT OUTLET 4.0m/S)



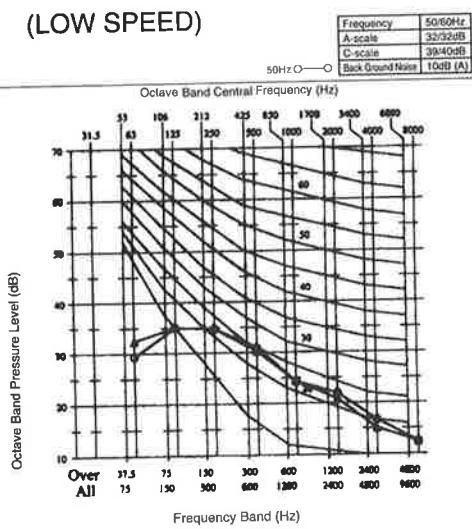
(LOW SPEED) (VELOCITY AT OUTLET 3.4m/S)



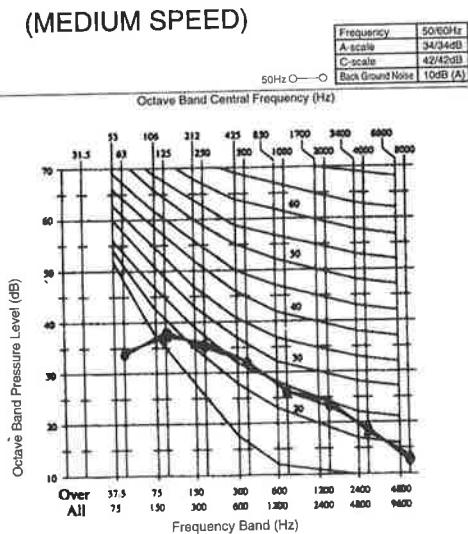
Sound data HIDE-AWAY TYPE

69Pa(7mmAq)

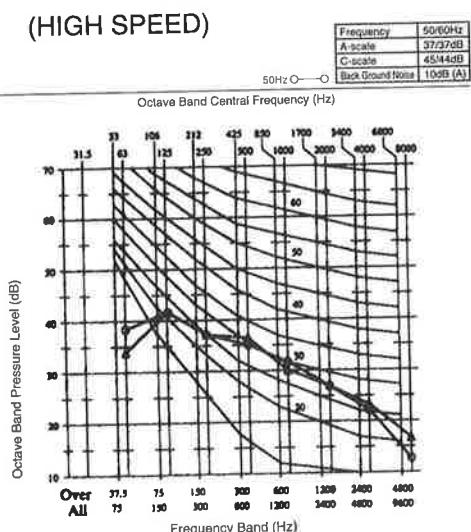
(LOW SPEED)



(MEDIUM SPEED)



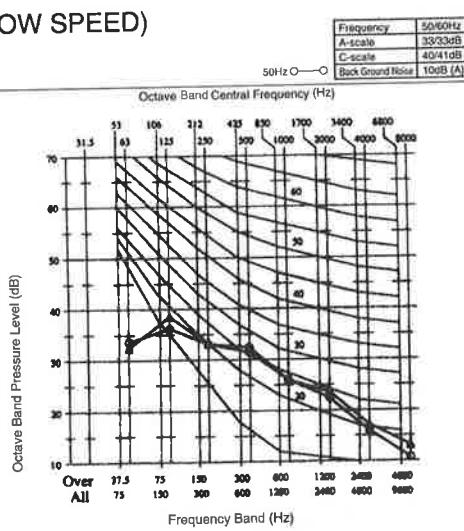
(HIGH SPEED)



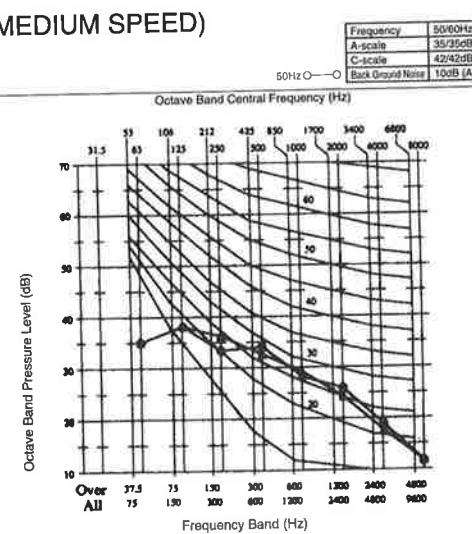
CS-P45EM1HP

98Pa(10mmAq)

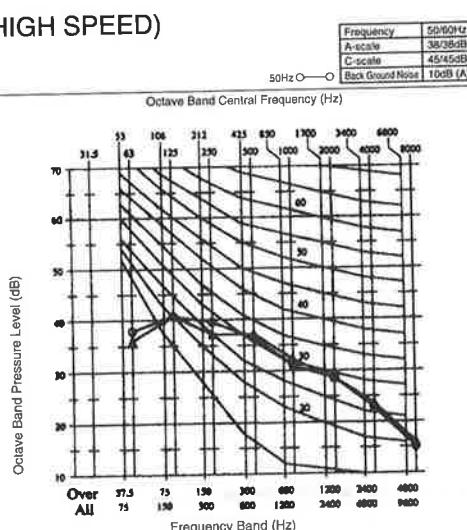
(LOW SPEED)



(MEDIUM SPEED)



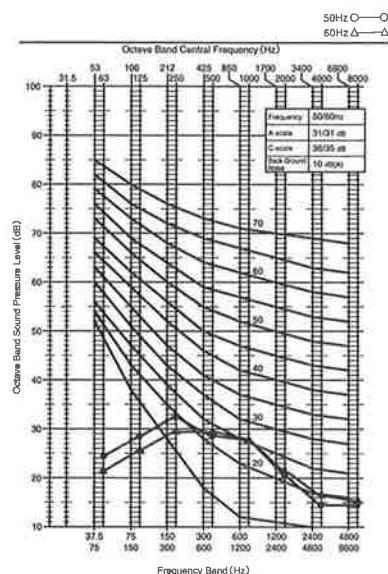
(HIGH SPEED)



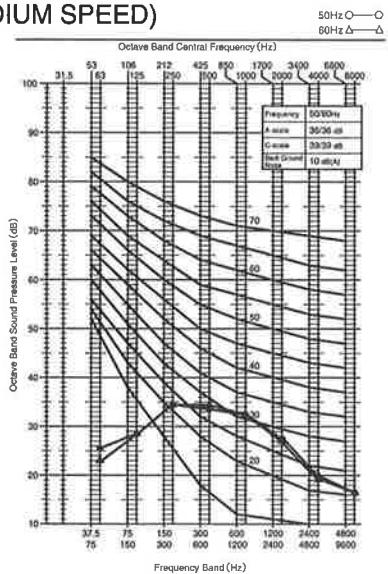
④ Sound data

ONE WAY CASSETTE TYPE

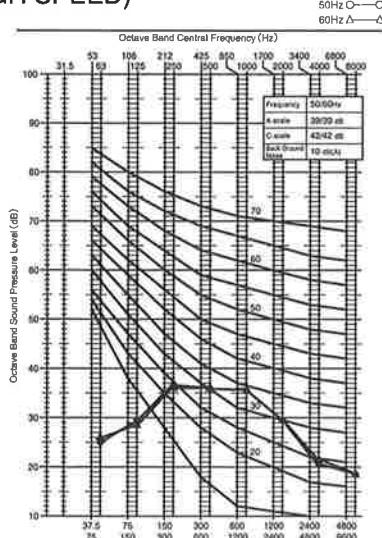
- CS-P28DM1HP



(MEDIUM SPEED)



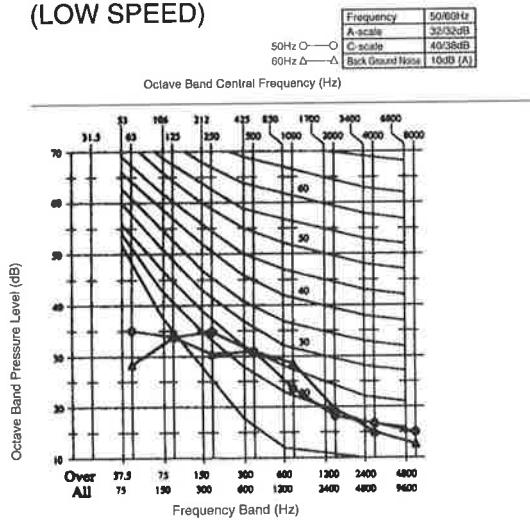
(HIGH SPEED)



Sound data HIDE-AWAY TYPE

69Pa(7mmAq)

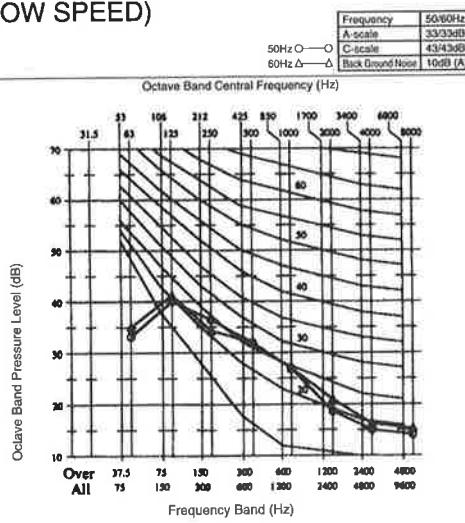
(LOW SPEED)



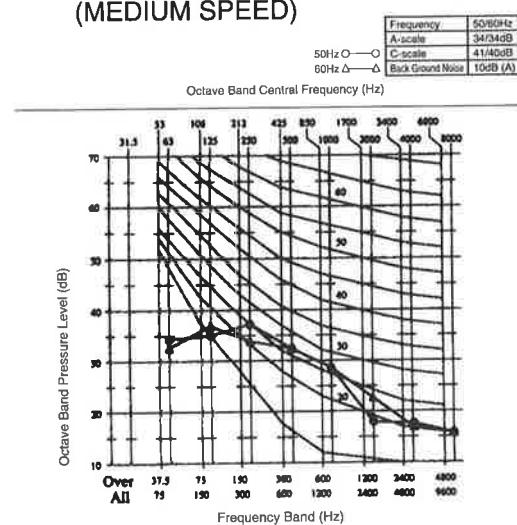
CS-P56EM1HP

98Pa(10mmAq)

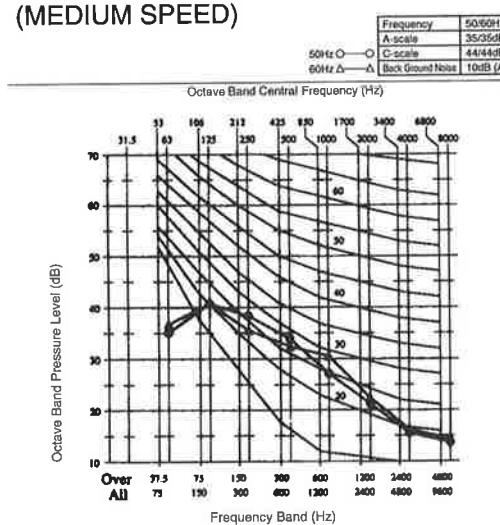
(LOW SPEED)



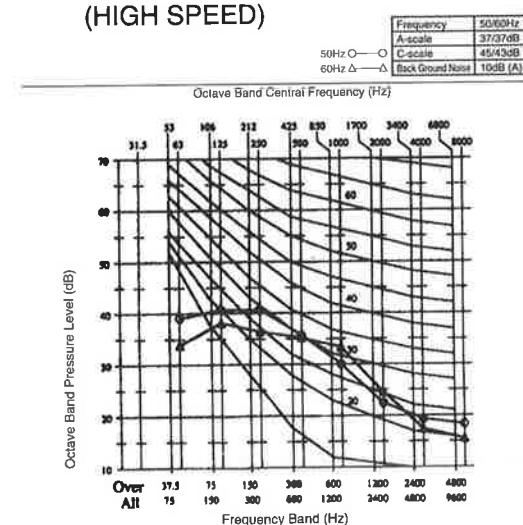
(MEDIUM SPEED)



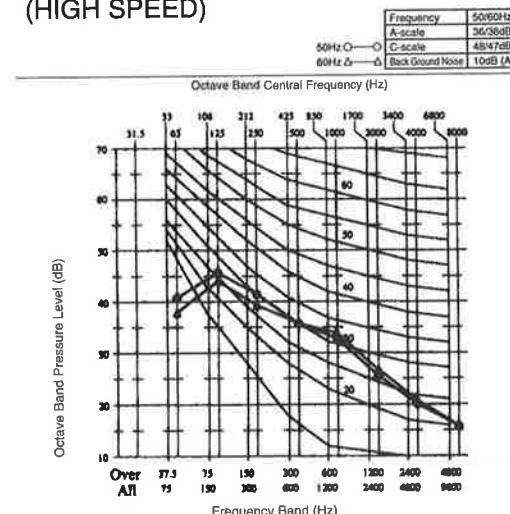
(MEDIUM SPEED)



(HIGH SPEED)



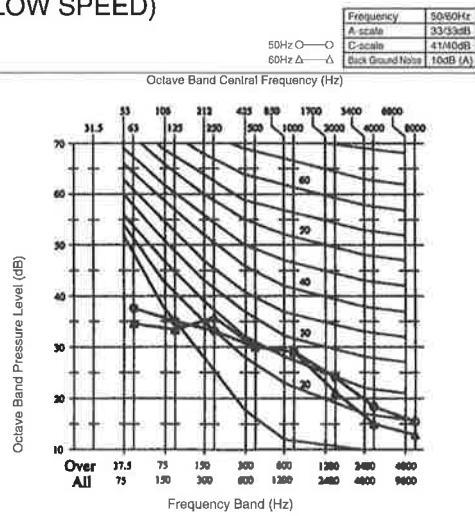
(HIGH SPEED)



Sound data HIDE-AWAY TYPE

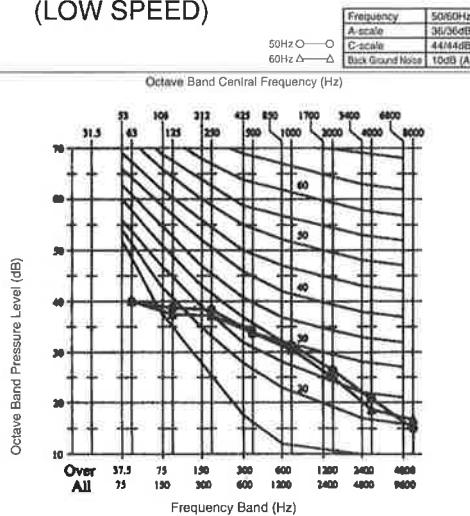
98Pa(10mmAq)

(LOW SPEED)

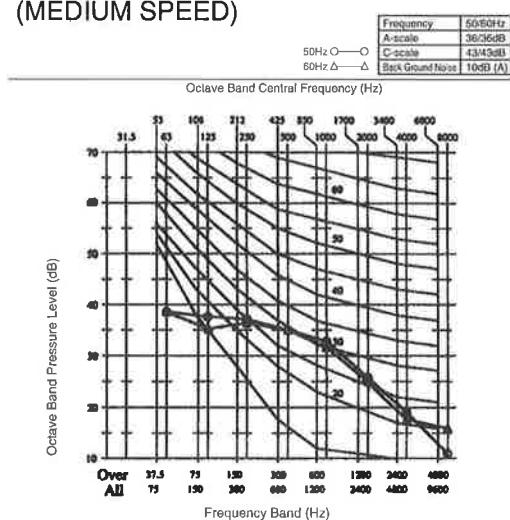


147Pa(15mmAq)

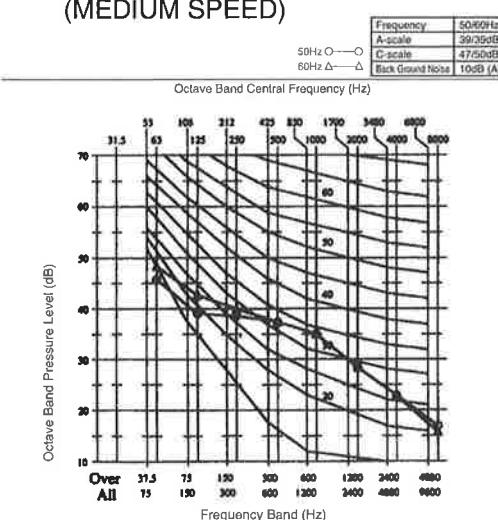
(LOW SPEED)



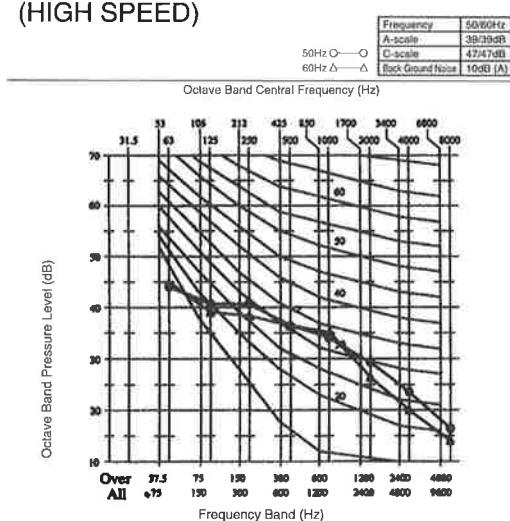
(MEDIUM SPEED)



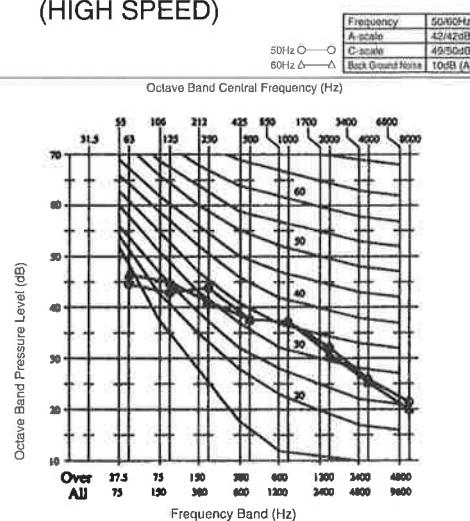
(MEDIUM SPEED)



(HIGH SPEED)



(HIGH SPEED)

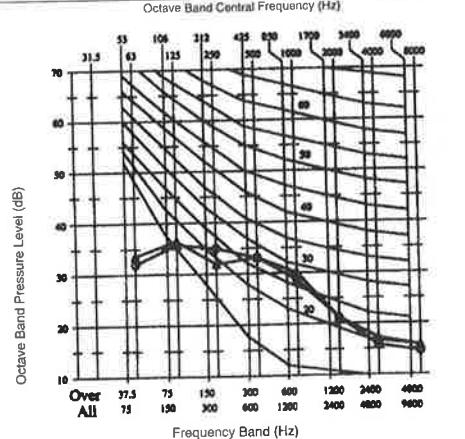


Sound data HIDE-AWAY TYPE

98Pa(10mmAq)

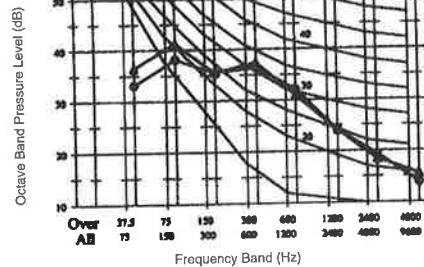
(LOW SPEED)

Frequency	50/60Hz
A-scale	34/40dB
C-scale	41/41dB
Background Noise	10dB (A)



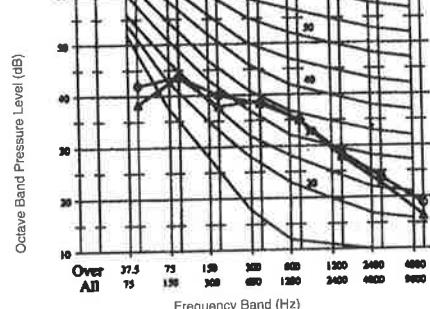
(MEDIUM SPEED)

Frequency	50/60Hz
A-scale	37/37dB
C-scale	43/44dB
Background Noise	10dB (A)



(HIGH SPEED)

Frequency	50/60Hz
A-scale	45/45dB
C-scale	48/47dB
Background Noise	10dB (A)

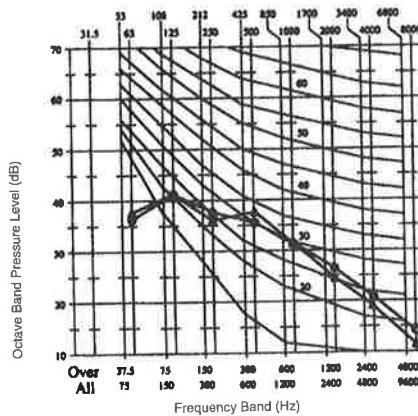


147Pa(15mmAq)

(LOW SPEED)

Frequency	50/60Hz
A-scale	37/37dB
C-scale	44/45dB
Background Noise	10dB (A)

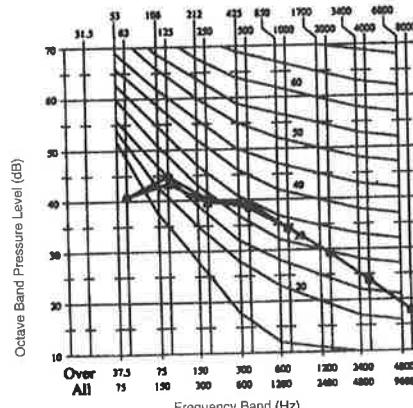
Octave Band Central Frequency (Hz)



(MEDIUM SPEED)

Frequency	50/60Hz
A-scale	40/40dB
C-scale	48/47dB
Background Noise	10dB (A)

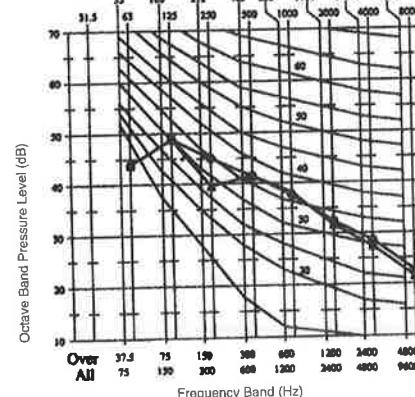
Octave Band Central Frequency (Hz)



(HIGH SPEED)

Frequency	50/60Hz
A-scale	43/43dB
C-scale	52/51dB
Background Noise	10dB (A)

Octave Band Central Frequency (Hz)

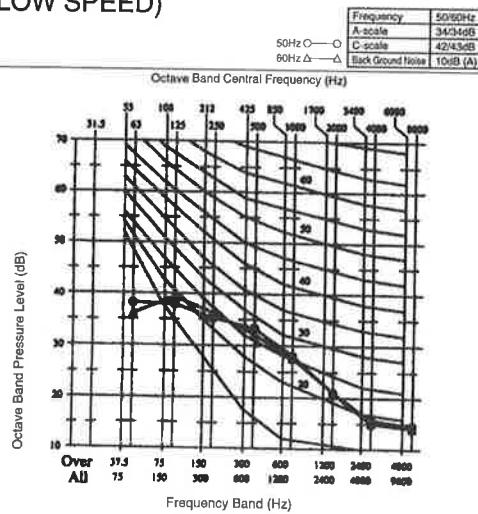


Sound data HIDE-AWAY TYPE

CS-P112EM1HP

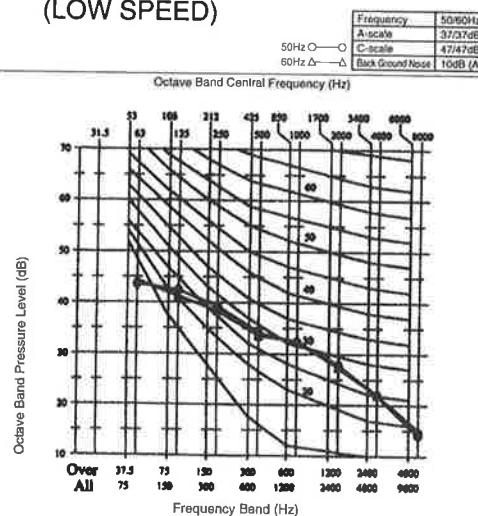
98Pa(10mmAq)

(LOW SPEED)



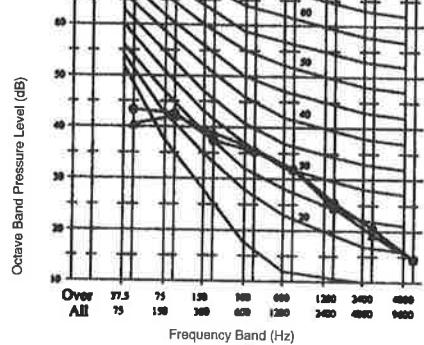
147Pa(15mmAq)

(LOW SPEED)



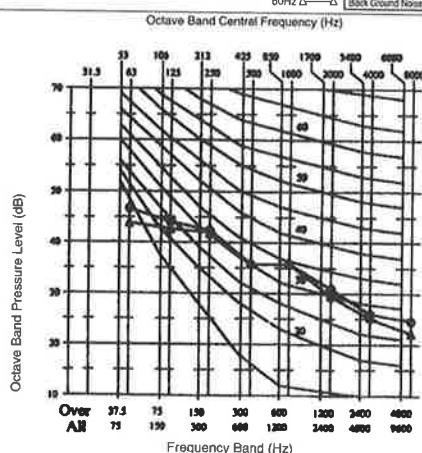
(MEDIUM SPEED)

Frequency	50/60Hz
A-scale	37/37dB
C-scale	47/46dB
Background Noise	10dB (A)



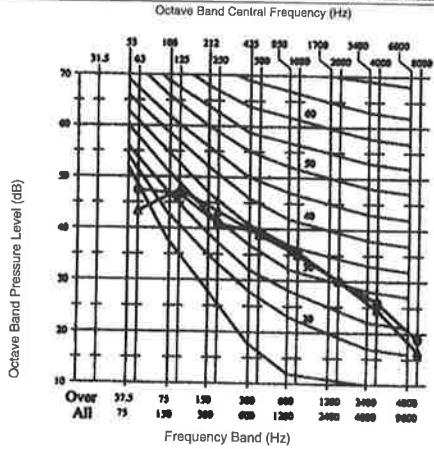
(MEDIUM SPEED)

Frequency	50/60Hz
A-scale	40/40dB
C-scale	50/49dB



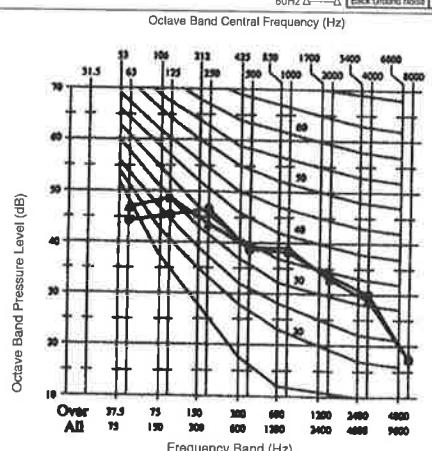
(HIGH SPEED)

Frequency	50/60Hz
A-scale	41/41dB
C-scale	50/50dB
Background Noise	10dB (A)



(HIGH SPEED)

Frequency	50/60Hz
A-scale	43/43dB
C-scale	51/52dB



Sound data HIDE-AWAY TYPE

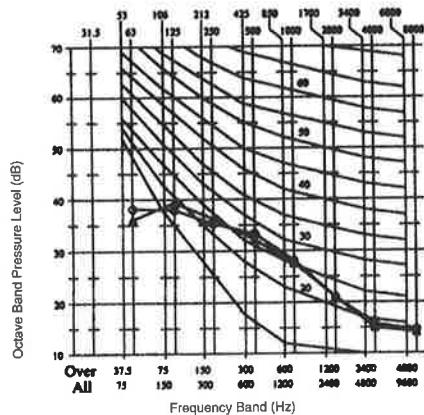
CS-P140EM1HP

98Pa(10mmAq)

(LOW SPEED)

Frequency	50/60Hz
A-scale	34/34dB
C-scale	42/43dB
Background Noise	10dB (A)

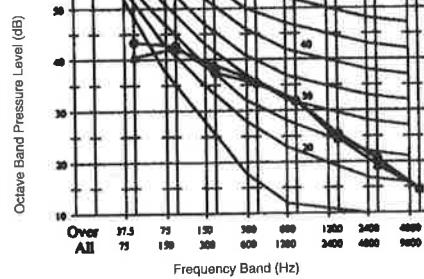
Octave Band Central Frequency (Hz)



(MEDIUM SPEED)

Frequency	50/60Hz
A-scale	37/37dB
C-scale	47/46dB
Background Noise	10dB (A)

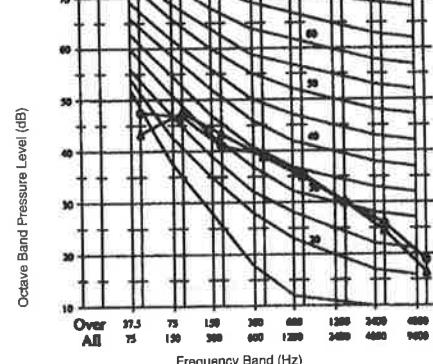
Octave Band Central Frequency (Hz)



(HIGH SPEED)

Frequency	50/60Hz
A-scale	41/41dB
C-scale	50/50dB
Background Noise	10dB (A)

Octave Band Central Frequency (Hz)

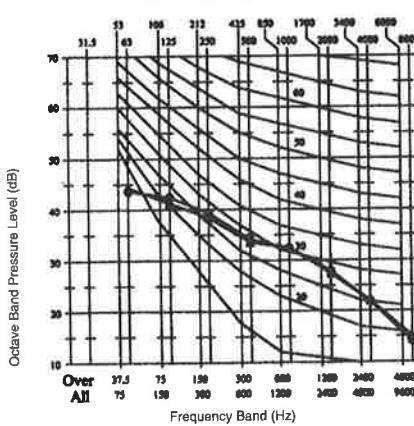


147Pa(15mmAq)

(LOW SPEED)

Frequency	50/60Hz
A-scale	37/37dB
C-scale	47/47dB
Background Noise	10dB (A)

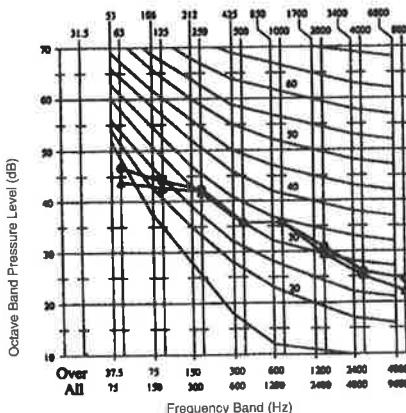
Octave Band Central Frequency (Hz)



(MEDIUM SPEED)

Frequency	50/60Hz
A-scale	40/40dB
C-scale	50/48dB
Background Noise	10dB (A)

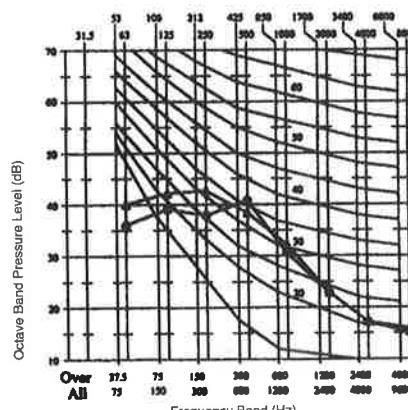
Octave Band Central Frequency (Hz)



(HIGH SPEED)

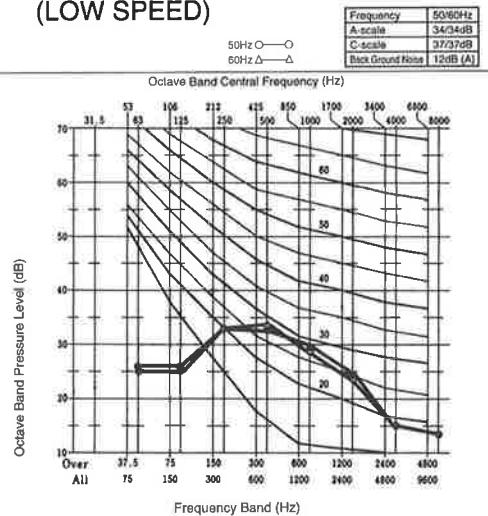
Frequency	50/60Hz
A-scale	43/43dB
C-scale	51/52dB
Background Noise	10dB (A)

Octave Band Central Frequency (Hz)

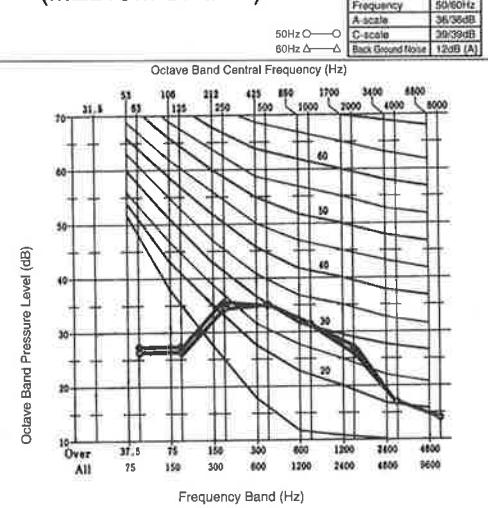


Sound data WALL TYPE

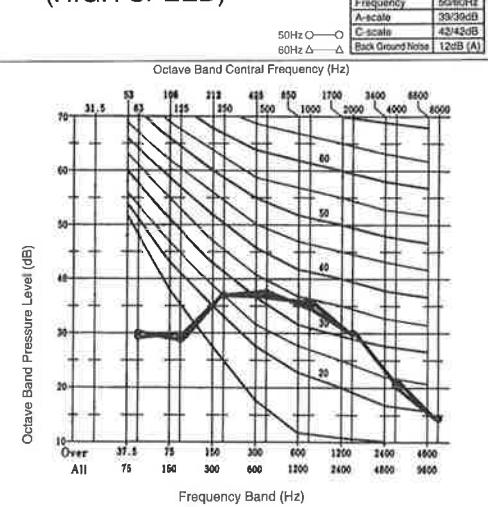
- CS-P22KM1HP
- CS-P36KM1HP
- CS-P45KM1HP
- (LOW SPEED)



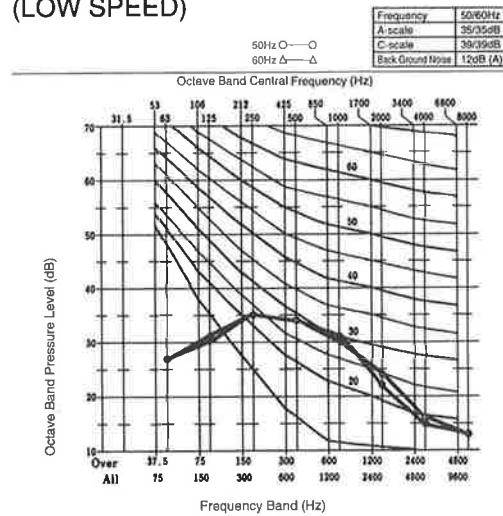
(MEDIUM SPEED)



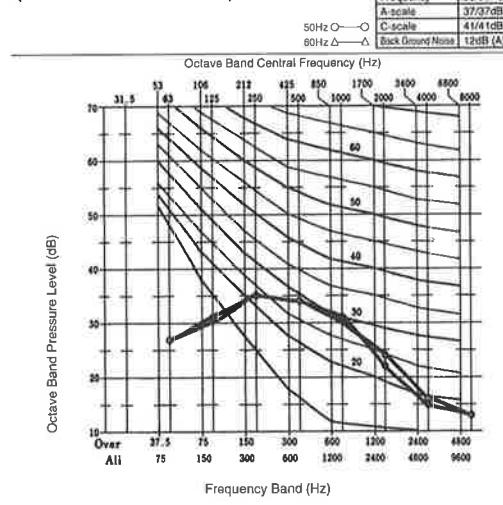
(HIGH SPEED)



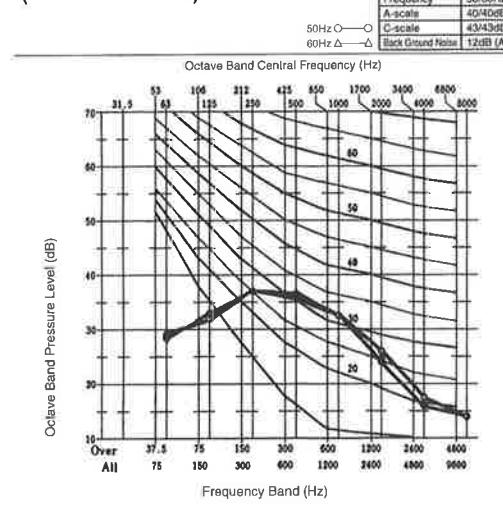
- CS-P56KM1HP
- CS-P71KM1HP
- (LOW SPEED)



(MEDIUM SPEED)



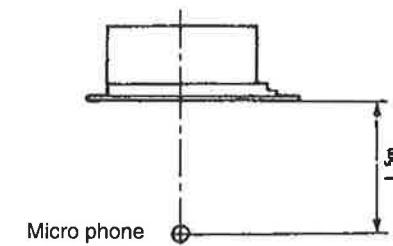
(HIGH SPEED)



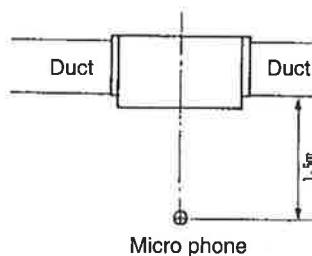
Sound data measurement

■MICRO PHONE POSITION

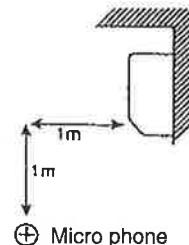
One-way Cassette Type
Four-way Cassette Type



Hide-Away Type



Wall Type



④ Specification of power source

[INDOOR UNIT]

Type	Model	Power Source			Power Consumption	Runnning Current	Wire Size (Minimum)		Distance	Circuit Breaker	Switch box		Earth	
		Phase	Volts	Frequency			mm ²	φ mm			A	A	mm ²	φ mm
One-way cassette	CS-28DM1HP	Single	220	50	0.03	0.14	2	1.6	—	15	15	10	2	1.6
			230			0.14								
			240			0.13								
Four-way cassette	CS-P45UM1HP	Single	220	50	0.065	0.31	2	1.6	—	15	15	10	2	1.6
			230			0.30								
			240			0.29								
	CS-P56UM1HP	Single	220	50	0.065	0.31	2	1.6	—	15	15	10	2	1.6
			230			0.30								
			240			0.29								
	CS-P71UM1HP	Single	220	50	0.09	0.42	2	1.6	—	15	15	10	2	1.6
			230			0.40								
			240			0.39								
	CS-P80UM1HP	Single	220	50	0.092	0.43	2	1.6	—	15	15	10	2	1.6
			230			0.41								
			240			0.39								
Hide-Away	CS-P112UM1HP	Single	220	50	0.17	0.71	2	1.6	—	15	15	10	2	1.6
			230			0.68								
			240			0.65								
	CS-P140UM1HP	Single	220	50	0.21	0.99	2	1.6	—	15	15	10	2	1.6
			230			0.95								
			240			0.91								
	CS-P45EM1HP	Single	220	50	0.21	1.04	2	1.6	—	15	15	10	2	1.6
			230			0.99								
			240			0.95								
	CS-P56EM1HP	Single	220	50	0.2	1.08	2	1.6	—	15	15	10	2	1.6
			230			1.03								
			240			0.99								
Wall	CS-P71EM1HP	Single	220	50	0.31	1.55	2	1.6	—	15	15	10	2	1.6
			230			1.48								
			240			1.42								
	CS-P80EM1HP	Single	220	50	0.32	1.53	2	1.6	—	15	15	10	2	1.6
			230			1.46								
			240			1.40								
	CS-P112EM1HP	Single	220	50	0.45	2.10	2	1.6	—	15	15	10	2	1.6
			230			2.01								
			240			1.93								
	CS-P140EM1HP	Single	220	50	0.52	2.30	2	1.6	—	15	15	10	2	1.6
			230			2.20								
			240			2.11								
	CS-P22KM1HP	Single	220	50	0.04	0.20	2	1.6	—	15	15	10	2	1.6
			230			0.19								
			240			0.19								
	CS-P56KM1HP	Single	220	50	0.05	0.27	2	1.6	—	15	15	10	2	1.6
			230			0.26								
			240			0.25								
	CS-P71KM1HP	Single	220	50	0.05	0.27	2	1.6	—	15	15	10	2	1.6
			230			0.26								
			240			0.25								

11 TEST OPERATION

1.TEST OPERATION

① Procedure

1 Checks before test operation

Charge with nitrogen and check that there are no welding or connection faults in the piping.



Has the vacuum been created?



Has the stop valve been opened?



Have all screws and bolts been checked for tightness?



Have insulation measurements been completed?



Have all of the address setting switches (DIP switches) been checked?

If all of the above checks have been carried out, the system is ready for test operation.

2 Turning on the power

Turn on the power for the outdoor unit so that power is supplied to the crankcase heater.
(Turn the power on six hours before test operation is to start.)



Turn off the power for the outdoor unit.



Turn on the power for the indoor units. (Single-phase 220-240 V)



After turning on the power for all indoor units, turn the power for the outdoor unit back on.



While running the outdoor unit in cooling mode, charge the additional refrigerant gas to the system further.

3 Test operation (Carry out according to the operating procedure on the following page.)

Carry out normal operation for 2-3 hours.

(Run in cooling mode if it is summer or the month before and after summer, and heating mode for any other season.)



Carry out the above operation and data checking for each indoor unit.

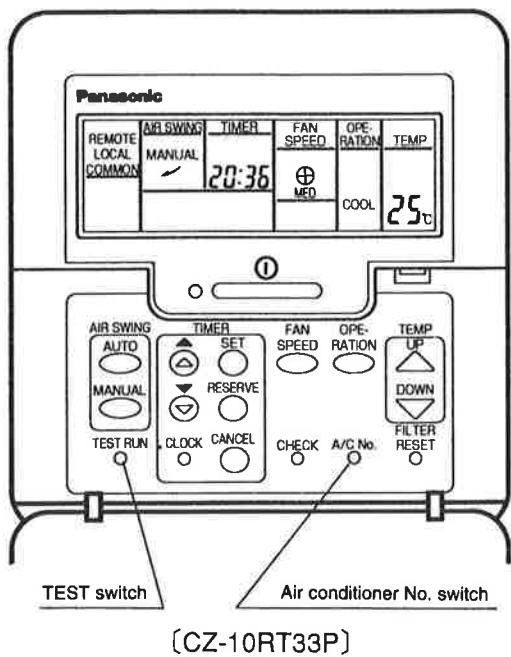


4 Handover

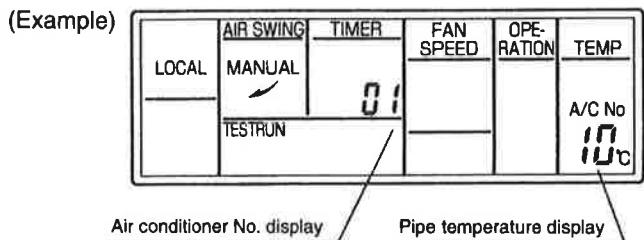
Once test operation is completed, give the instruction manual to the customer and explain to them how to operate the system.

TEST OPERATION AND SELF DIAGNOSIS

● Test operation using the wired remote controller



1. Check that "COOL" is displayed on the operation mode display, and then press the RUN switch to start test operation.
2. Within 1 minute of pressing the RUN switch, press the TEST RUN switch.
3. The pipe temperature (gas pipe) will then be displayed in the temperature setting display of the remote controller

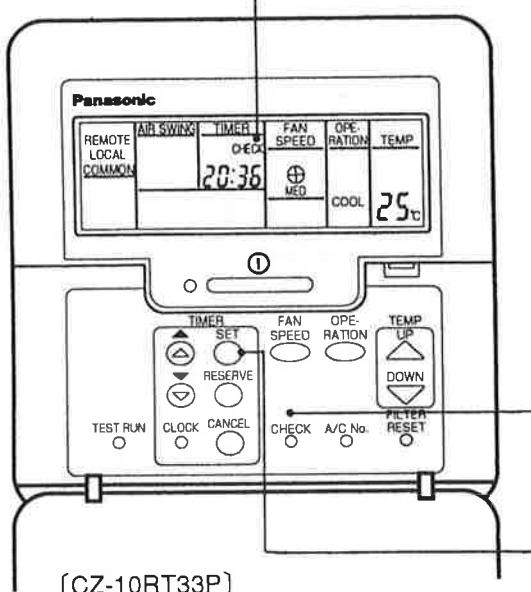


- During group control, the number appearing in the timer display will change each time the air conditioner No. switch is pressed, and the pipe temperature for the indoor unit corresponding to the number displayed will appear in the temperature setting display.
- 4. Check that the temperature in the pipe temperature display starts dropping after operation has been continuing for some time.
(The temperature will increase during heating operation.)

TEST OPERATION AND SELF DIAGNOSIS

■ Self-diagnosis function

- The wired remote controller display and the self-diagnosis LEDs (red) on the outdoor unit printed circuit board indicate where the abnormality has occurred.
- Recalling the error display

Display

<Air conditioner No. >

- The air conditioner No. "01" appears during normal installation and use. When using group control, a different number may appear. The air conditioner No. can be displayed by pressing the air conditioner No. switch.

- After checking the error display and the detail display, refer to the self-diagnosis error code table on the following page and check the location of the problem.
- If the problem is repaired and operation returns to normal, the CHECK display on the remote controller will put out, but the self-diagnosis LED will remain illuminated until operation starts again.

How to display the past error message

If the "CHECK" display on the wired remote controller is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER, FORWARD or BACK buttons.

(Last problem display: 1F15 - 1F49

Second-last problem display: 2F15 - 2F49)

Press the CHECK button once more to return to the normal display.

(Example)

LOCAL	AIR SWING	TIMER	FAN SPEED	OPERATION	TEMP
	MANUAL	CHECK 20:36	MED	COOL	25°C

When an abnormality occurs at this unit, "CHECK" flashes in the display.

Press the CHECK switch while the display is flashing.

(Example)

LOCAL	AIR SWING	TIMER	FAN SPEED	OPERATION	TEMP
		CHECK F 15			A/C No 01

The timer display will change and an error code from F15 to F49 will appear in place of the time. (The temperature setting display will also change to show the air conditioner No.)

Press the TIMER ON/OFF switch while the error is displayed.

(Example)

LOCAL	AIR SWING	TIMER	FAN SPEED	OPERATION	TEMP
		CHECK - 01			A/C No 01

The F15 - F49 display will change to the detail display.

- After checking the error display and the detail display, refer to the self-diagnosis error code table on the following page and check the location of the problem.
- If the problem is repaired and operation returns to normal, the CHECK display on the remote controller will put out, but the self-diagnosis LED will remain illuminated until operation starts again.

(Example of last problem display)

LOCAL	AIR SWING	TIMER	FAN SPEED	OPERATION	TEMP
		CHECK 1F 15			A/C No 01

An error code from 1F15 to 1F49 will be displayed.

(The temperature setting display will also change to show the air conditioner No.)

(Example)

LOCAL	AIR SWING	TIMER	FAN SPEED	OPERATION	TEMP
		CHECK 1- 01			A/C No 01

If the TIMER ON/OFF switch is pressed while the error code from 1F15 to 1F49 is being displayed, the display screen will change to show the details of the last problem display.

(If 2F15 to 2F49 is being displayed, the details of the second-last problem display will appear.)

DSW4 Power supply setting for "URBAN-NET" (24V DC).

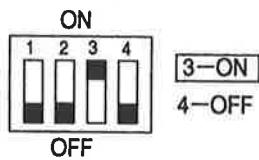
CU-224MX1XP
CU-280MX1XP

To ensure correct operation, when the wiring construction work is complete, set the supply power switch 「ON」 control printed circuit Board for DSW4.

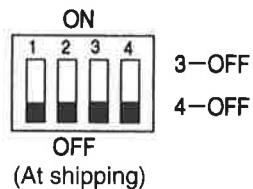
• **Piping Length Setting (DSW 1)**

Set dip switch DSW1 of outdoor unit.
Setting is performed with "3" and "4".

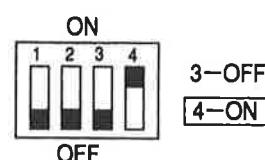
Approx. 0m - under 30m
(Actual length)



Approx. 30m - under 70m
(Actual length)



More than approx. 70m
(Actual length)

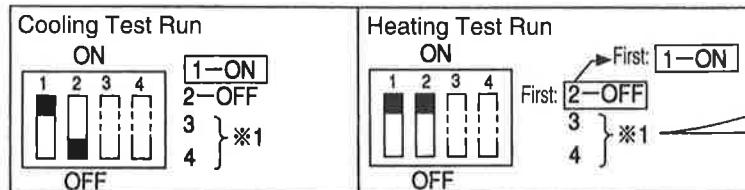


• **Settings Control circuit board During Test Run (DSW1)**

Set dip switch DSW1 of outdoor unit.
Setting is performed with "1" and "2". (All OFF at shipping)

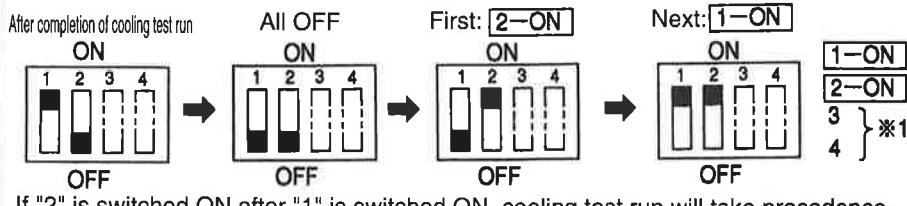
(Note)

When performing test run, always operate cooling first for at least 5 minutes (to prevent compressor failure).



*1 "3" and "4" are used to set piping length.
Refer to above when setting.

When shifting from cooling test run to heating test run, use the following sequence.



(Note) After completion of test run, always turn DSW1 "1" and "2" OFF.

(When not turned OFF, operation can continue and cause malfunction.)

• Test run ends when "1" and "2" of outdoor unit dip switch DSW1 are switched OFF or when stopped by indoor unit remote controller.

• After start, several minutes' protection is sometimes carried out for heating operation when outside temperature is high and for cooling operation when outside temperature is low.

(When operated by outdoor unit, test run is performed for all indoor unit.

When operated from indoor unit (by remote controller), test run is performed only for indoor unit operated.)

■When Test Run is Unsuccessful

- Consult the following suggestions

1 Check all remote controller diagnostic failure display.

Check all indoor unit remote controllers of the system identical to failing unit. Check for diagnostic failure display (E codes). Check the status of LEDs on each board (indoor/outdoor) of failing unit, also.

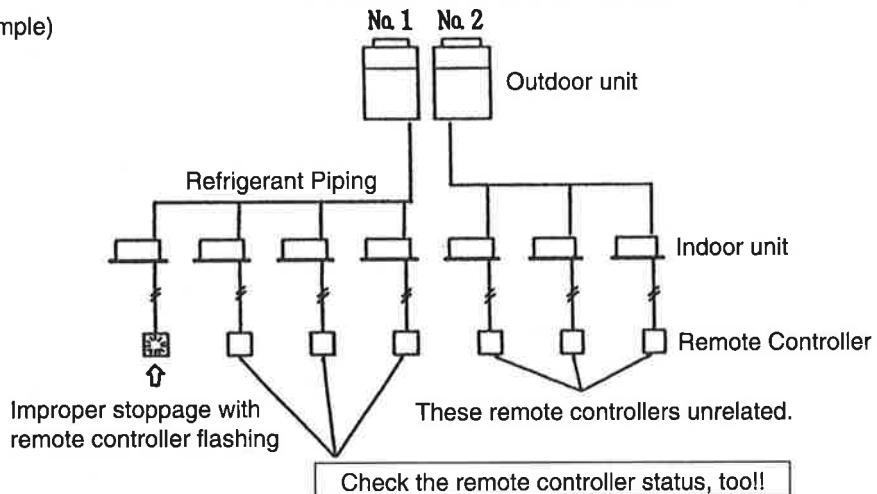


Once these items are checked thoroughly, use the self-diagnostic function table for trouble shooting.

If multiple failures occur simultaneously, repair each system separately.

2 Consider outdoor unit systems independently.

(Example)



3 After power is switched (OFF), perform basic check.

After power is switched (OFF) for both indoor and outdoor unit, make the following basic checks, power on again, and check run status.

- (1) Are connectors loose or detached?
- (2) Are wires broken, or have connections to terminal blocks been forgotten?
- (3) Are screws loose, or is there separation at terminals?
- (4) Have dip switches and addresses been set properly?

4 Use remote controller sold separately and perform independent runs to draw problems.

2.Self-Diagnosis function

● List of Error codes(CU-P224MX1XP,CU-P280MX1XP)

SELF-DIAGNOSIS FUNCTION

(* indicates flashing)

You can find the accident point by the self-diagnosis LEDs on the outdoor unit PCB-C and indoor unit PCB, or the remote controller. Correct the accident point as shown in the table below before restarting operation.

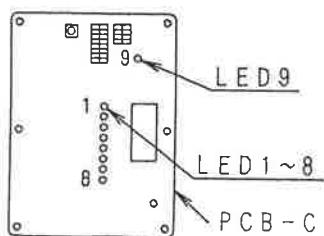
Abnormal Detail	Wired remote control unit display	Indoor LED		Outdoor LED		Location of problem	Check location			
		1	2	3	4	5	6	7	8	
F15	-01	*								Drain pump, float switch or drain pipe, indoor unit connectors CN8 & CN10 or relay connector.
F16	-01	*	*							Louver motor, decorative panel connection terminal, or indoor unit connectors CN1 & CN6
F20	-01		*							Indoor temperature thermistor problem.
	-02									Remote control thermistor problem.
F21	-01		*							Tb ₁₃ Pipe temperature
F22	-01		*							Tb ₁₂ Theristor(indoor unit)
F25	-01	***	*							Communication control address overlap problem. (indoor unit)
F26	-01	***								Remote control transmission wire open circuit problem.
	-02	***	***							Remote control transmission problem.
				*	*	*				Outdoor unit address duplicated
F27	-01		***							System error
				***						Indoor/outdoor unit transmission wire open circuit problem.
					***					Main power supply(negative phase connection)
						***				Over current relay worked
							***			Indoor/outdoor unit transmission problem.
F29	-01	*	***							Indoor unit setting problem.
										Contact the place of purchase
F30	-01	*		***						System error
	-02			***						Total capacity for the number of indoor units is insufficient, or over.
	-04			***	*					Check the total capacity and the number of indoor units.
F31	-01	*		*	*					Main power supply(negative phase connection)
	-02			*	*					Setting error of outdoor unit HP rotate pressure protection.
										Low pressure sensor lead wire, outdoor unit connector CN12, or relay connector
										Contact the place of purchase
F32	-01	*		*	*					High-pressure cut-off.
	-02			*	*					Inverter protection(disconnect)
	-03			*	*					Inverter protection(over voltage)
	-09			*	*					Inverter protection(low voltage)
	-07			*	*					Inverter protection(PM protection)
	-05			*	*					Inverter protection(Current Sensor fault)
	-06			*	*					Over current protection(COMP2)
	-32			*	***					Discharge Temp. too high(COMP2)
										Contact the place of purchase
F33	-01	*		*	*					Over current protection.(COMP1)
	-02	*		*	*	*				Compressor discharge temperature protection.(COMP1)
										Contact the place of purchase
F40	-01			*						Thermistor Tb1 (outdoor temp.)
	-21	*	*	***						Thermistor Tb3 (outdoor heat exchanger outlet temp.)
	-41			*	*					Thermistor Tb11(COMP1 discharge temp.)
	-51			*	*					Thermistor Tb19(COMP2 discharge temp.)
F41	-01	*	*		*					High-pressure sensor open circuit problem.
	-11	*	*	*	*	*				Low pressure sensor open circuit problem.
F42	-01	*	*	***	*					CTB1
	-11	*	*	***	*	*				CTB2 Current detector problem
										Outdoor unit PCB-C CN11 faulty connection or broken wire

CAUTION

*1 For F25,F27, in addition to those given above check the DIP switch address settings for indoor units and outdoor units.

Flashing LED9(yellow) indicates that microprocessor is functioning normally.

*The LEDs(red)in PCB-INV indicate the state of operating.
(There are not error message.)



3.TEST OPREATION CHECK SHEET**Test Operation Check Sheet for Packaged Air Conditioners**

[For UMX Multi]

Customer	Name		Customer approval	Phone No.
	Address			

Dealer	Company name		Phone No.
	Address		
Installation company (agent)			Phone No.
Company name			Phone No.
Business address			Phone No.

Test operator		Date:	Company name			Name		
System name					Outdoor unit	Product No.		
						Lot No.		
System Nos.	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
Indoor units	Product No.							
	Lot No.							

<Necessary check items>

[Essential items]

- Turn the power on 6 hours before carrying out test operation. ... (This supplies power to the compressor heater [crankcase heater] to stop valve damage due to compression errors when operation starts)
- Always carry out test operation in cooling mode, even if installing during the warm season.
- Power supply settings (Urban Network)

[Checks before operation]

- Are power supply wiring specifications such as leakage current breakers, wire thicknesses, cable lengths and tightening torques correct?
- Is the electrical insulation resistance value $1 \text{ M}\Omega$ or higher?
- Does the grounding work conform to Class 3 specifications?
- Does the drain pipe run downward, have all welded connections and internal pipes been insulated, and is the pipe free of leaks?
- Has separate refrigerant pipe insulation been provided for gas and liquid pipes, and are the pipes free of leaks?
- Are the air conditioner unit and veneer panel attached securely, and have any water leaks due to cool air leaking been prevented?
- Are the indoor units and outdoor units set up in stable locations, and are the installation bolts securely tightened?
- Are the refrigerant pipe connections free of leaks?

Tick when checked

- Checked Not checked
 Checked Not checked

*Have all printed circuit board settings been completed?

 Checked Not checked

(Add any further items below if required.)

[Checks during operation]

 Cooling mode heating mode

[Essential items]

- Measure and record the test operation characteristics and keep the measurement data in a safe place.

Tick when checked

- Measurement items are listed on the following page or on a separate page.
- Power supply voltage, operating voltage and operating current measurements
- Temperature measurements at various locations
- Pressure measurements at various locations
- Fan speed and air flow volume measurements (mainly for duct type)
- Abnormal vibration check
- Abnormal noise check

- Judgment OK Not OK
 OK Not OK

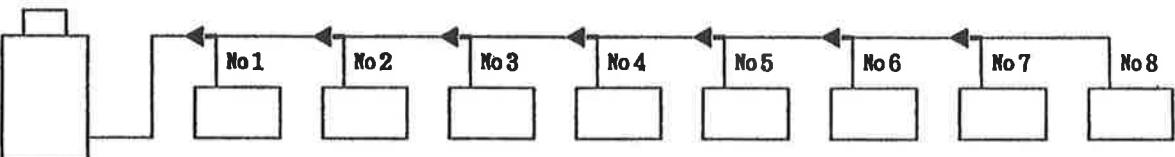
[Comments during handover to customer]

[Service history]

Test Operation Check Sheet for Packaged Air Conditioners

[For UMX Multi]

Test operator	Date:	Company name	Name
---------------	-------	--------------	------

System configuration diagram	System name
	

Pipe length		m (additional charge amount g)	High/low height difference	m (Outdoor unit Up Down)
Pipe length setting		DIP SW2: No.1 (ON, OFF) No. 2 (ON, OFF)	Outside air temperature	(DB : °C) (DB : °C)
Outdoor unit address No.			Power supply voltage	(L ₁ -L ₂ : A) (L ₂ -L ₃ : A) (L ₁ -L ₃ : A)
Outdoor unit	High pressure	MPa(kgf/cm ²)	Heating mode test operation	High pressure MPa(kgf/cm ²)
	Low pressure	MPa(kgf/cm ²)		Low pressure MPa(kgf/cm ²)
	Discharge pipe temperature	°C		Discharge pipe temperature °C
	Intake pipe temperature	°C		Intake pipe temperature °C
	Operating current	(L ₁ : A) (L ₂ : A) (L ₃ : A)		Operating current (L ₁ : A) (L ₂ : A) (L ₃ : A)
	Cooling mode test operation judgment	GOOD NG	Heating mode test operation judgment	GOOD NG

Indoor units	System No. Room or A/C No.	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8
	Indoor unit address No.								
	Corresponding outdoor unit address No.								
	Remote control	Remote control unit used	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
		Group control active	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
		Unit setting for remote group control	Master / Slave	Master / Slave	Master / Slave	Master / Slave	Master / Slave	Master / Slave	Master / Slave
		DIP switches ON	1234	1234	1234	1234	1234	1234	1234
		Relay board CN8 fitted	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
	Options	Humidifier DIP switch 3-5 setting	Yes / No ON / OFF	Yes / No ON / OFF	Yes / No ON / OFF	Yes / No ON / OFF			
	Cooling / Heating	Pipe temperature	°C	°C	°C	°C	°C	°C	°C
		Intake air temperature	°C	°C	°C	°C	°C	°C	°C
		Discharge air temperature	°C	°C	°C	°C	°C	°C	°C
		Air flow volume / Fan speed (duct type)	m ³ /min	m ³ /min	m ³ /min	m ³ /min	m ³ /min	m ³ /min	m ³ /min
		Intake/discharge temperature difference	°C	°C	°C	°C	°C	°C	°C
		Performance judgment	GOOD / NG	GOOD / NG	GOOD / NG	GOOD / NG	GOOD / NG	GOOD / NG	GOOD / NG
	Indoor/outdoor units	•Abnormal vibration Yes / No •Abnormal noise Yes / No				Overall system judgment	GOOD/ NG		
Remarks									

*If nine or more indoor units are being used, use two of these sheets.

PACKAGED AIR CONDITIONERS

INVERTER MULTI CONTROL SYSTEM [ADDRESS SETTING] MANUAL

UMXR-R407C SERIES

Setting addresses of units

1. It is necessary to set addresses for the indoor units, the outdoor units, and the remote controllers as indicated in the table below. If these settings are not done, the equipment will not operate correctly.

	Address type	Units for which the address on the left are set.	Address setting method
A Addresses required for communication between indoor and outdoor units.	Indoor unit address	Indoor unit	Refer to this paper
	Correspondingly outdoor unit address	Indoor unit	
	Outdoor unit address	outdoor unit	
B Required address for group control by one remote controller.	Group address	Indoor unit	Refer to the manual affixed to remote control
C Required address for control by two remote controllers.	Main/Following setting	Remote controller	

- Refer to the installation manual affixed to remote control the address setting for B and C in the table above. The address setting for A will be explained here.
- The indoor unit address is used to distinguish between indoor units. Make absolutely sure that you do not set the same address into more than one unit. If an address is duplicated, control will not be possible.
- The outdoor unit and each indoor unit has the outdoor unit address and the correspondingly outdoor unit address. This shows which indoor unit is connected with which outdoor unit by the refrigerant piping. Give the outdoor unit and the indoor unit connected by the refrigerant piping as same address.

2. Set the address for A as outlined in the table below.

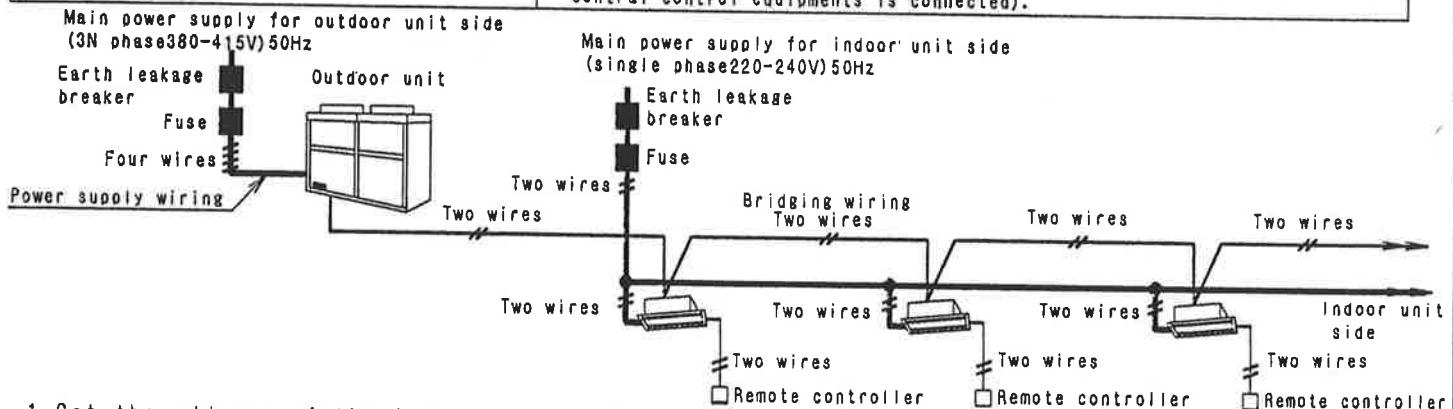
There are three ways to set addresses, [1. Automatic address setting,] [2. Manual address setting,] and [3. Remote controller address setting.] Select the method you will use depending on the type of address and type of wiring.

Type of address Wiring method Setting the address	Indoor unit				Outdoor unit		
	Indoor unit address		Correspondingly outdoor unit address	Outdoor unit address			
Refrigerant piping pair method	URBAN NET method	Refrigerant piping pair method	URBAN NET method	Refrigerant piping pair method	URBAN NET method		
1. Automatic	Address setting 「000」	Not possible	Address setting 「000」	Not possible	Address setting 「000」	Not possible	
2. Manual	Address setting (from 001 to 199)		Address setting (from 001 to 199)	Address setting (from 001 to 199)	Address setting 「001」	Address setting (from 001 to 199)	
3. Remote controller					Setting via remote controller not possible		

- Automatic address setting only possible for the refrigerant piping pair method.

1. Automatic address setting

When the wiring is done using the pair method, it is possible to set the addresses for each indoor unit automatically (it is not possible when the central control equipments is connected).



1. Set the address of the indoor units and the outdoor units to 「000」.
(At the time of shipment, the indoor units and the outdoor units are set to 「000」 respectively.)
2. Turn the power to the indoor units on before turning the outdoor units on.
(They can also be turned on at the same time.)
When the power to the outdoor units is turned on, the address are automatically set.
(The addresses are set approximately one minute after the power comes on.)
However, if even one of the indoor units is not turned on, the address will not be set when the outdoor units are turned on.
3. After automatic address is set, the indoor unit address and the correspondingly outdoor unit address can be confirmed by the remote controller.
See the paragraph of 「3. Setting addresses using the remote controller」 about the confirmation method.
4. Automatic address setting also done with one remote controller group control (however, the group address is not set automatically).
5. Once the addresses have been automatically set, they are stored even when the power is off. To reset the address, delete all the addresses of the indoor units using the remote controller, and repeat the automatic setting procedure from step 2 above, or from step 8 below.
6. When the wiring has been done using the refrigerant piping pair method, 「Manual address setting (on the PCB)」 and 「Address setting using the remote controller」 is also possible.
7. It is not possible to bridge wire the indoor units for different outdoor unit systems.
 - When the power to the indoor units is switched on, the 'check' display comes on, but after automatic address setting, pushing the **RUN** switch on the remote controller clears the 'check' display.
 - If the check display (F25) is not cleared, supply the power to the outdoor units on again.
 - If the check display (F25) is not cleared, even after supplying the power to the outdoor units on again, continue from step 8 below.

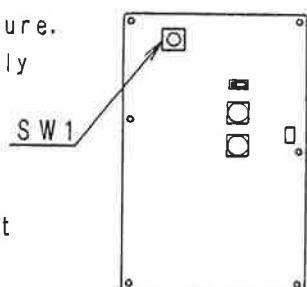
8. To read automatic address setting, carry out the following procedure.

Turn on the power to all indoor units and outdoor units, then continuously press SW1 on PCB of outdoor unit for at least four seconds. Automatic address setting will be performed again.

(The LED1-8 on the outdoor unit PCB turn on one by one.

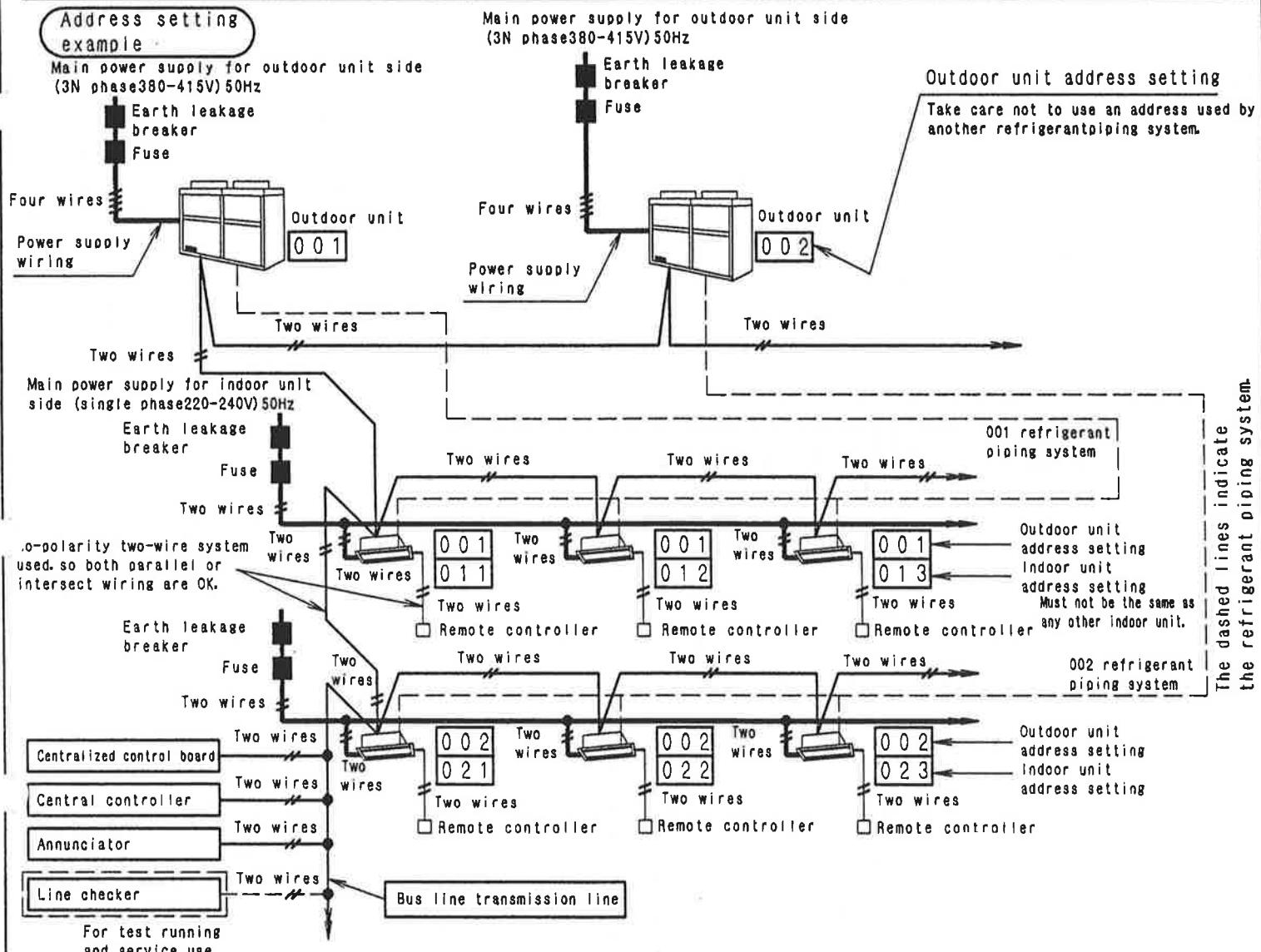
The LED1-8 turn on of all release SW1 to perform automatic setting.)

*If the unit addresses of the outdoor units and the outdoor unit addresses for the indoor units are set to 「000」 respectively, automatic address setting will not be done.



2. Manual address setting

Manual address setting is possible for all wiring methods including URBAN NET (all units connected to a single bus line regardless of their refrigerant piping system).



1. Set the addresses using the switches on the PCB's of each unit (see following page).
2. Make the initial address setting for each unit with the power off.

The address you set is stored when the power is turned on.

3. Refer to the following list when setting addresses.

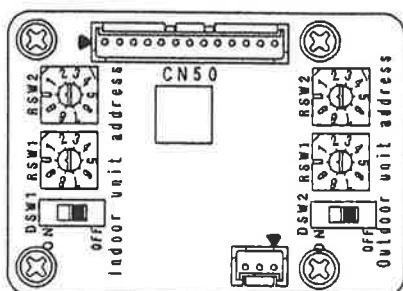
- (1) For the outdoor units, set the [outdoor unit address].
 - (2) For the indoor units, set the [correspondingly outdoor unit address] and the [indoor unit address].
 - (3) Refer to the address setting example given in the above diagram.
4. The indoor unit's [correspondingly outdoor unit address] and outdoor unit's [outdoor unit address] for the same refrigerant piping system are set to the same number. (see above page)
- Ⓐ The [indoor unit address] must be unique for all indoor units.
 - Ⓑ The outdoor unit's [outdoor unit address] must not be duplicated on outdoor units of other refrigerant piping systems.
 - Ⓒ To change a stored address, turn the power on, and reset the address that you wish to change. Addresses cannot be changed with the power off.

◎ At first the outdoor side power supply should be connected to the supply power unit. (the unit with DSW4 on)

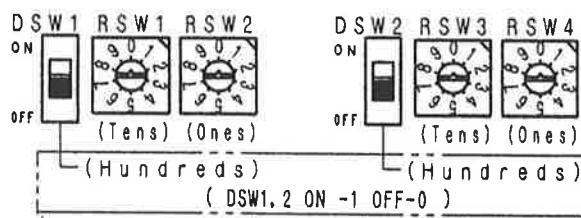
◎ Addresses 「000」 cannot be used.

5. The position of numbers on the PCB switches are as shown in the diagram below.

Indoor unit



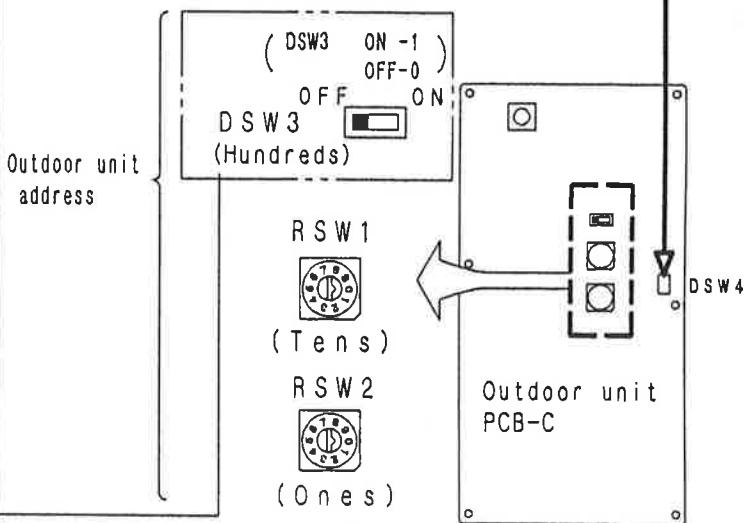
indoor/outdoor unit address PCB



Indoor unit
address

Outdoor unit
address

Outdoor unit



The table of address
In case of DSW1, 2, 3 is off.
 (=Hundreds is 0.)

In case of DSW1, 2, 3 is on.
 (=Hundreds is 1.)

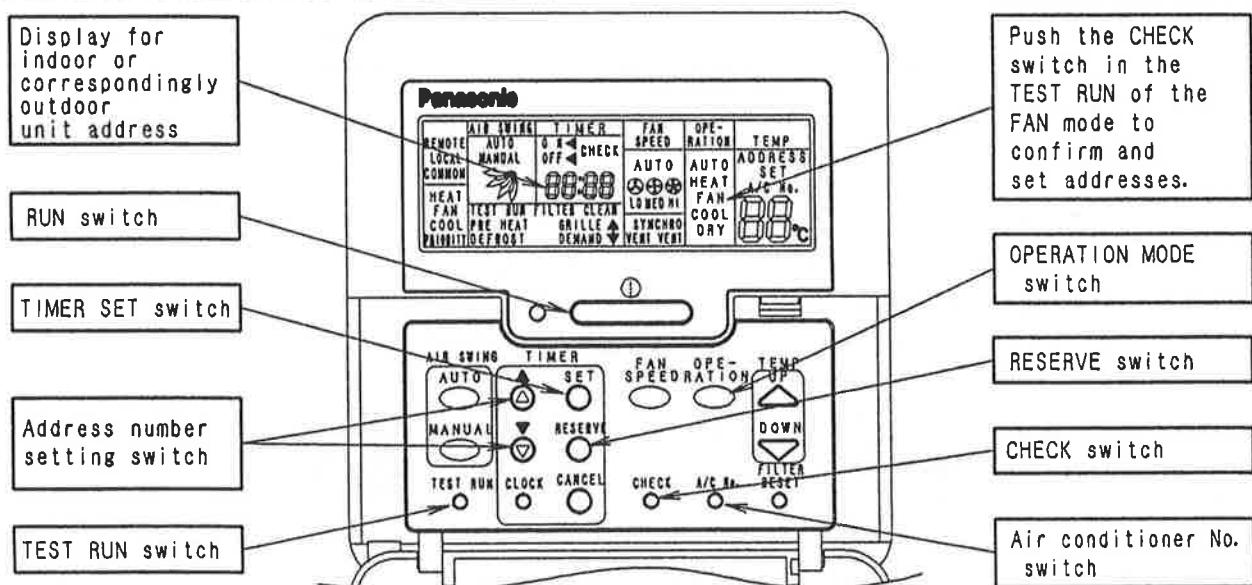
		RSW2 [RSW4]* (Ones)														
		0	1	2	3	4	9	0	1	2	3	4	9	
RSW1 [RSW3]* (Tens)	0	—	001	002	003	004	009	0	100	101	102	103	104	109
	1	010	011	012	013	014	019	1	110	111	112	113	114	119
	2	020	021	022	023	024	029	2	120	121	122	123	124	129
	3	030	031	032	033	034	039	3	130	131	132	133	134	139
	:	:	:	:	:	:	:	:	:	:	:	:		
	9	090	091	092	093	094	099	9	190	191	192	193	194	199

* [RSW3] [RSW4] is only in the indoor unit.

		RSW2 [RSW4]* (Ones)														
		0	1	2	3	4	9	0	1	2	3	4	9	
RSW1 [RSW3]* (Tens)	0	100	101	102	103	104	109	0	100	101	102	103	104	109
	1	110	111	112	113	114	119	1	110	111	112	113	114	119
	2	120	121	122	123	124	129	2	120	121	122	123	124	129
	3	130	131	132	133	134	139	3	130	131	132	133	134	139
	:	:	:	:	:	:	:	:	:	:	:	:		
	9	190	191	192	193	194	199	9	190	191	192	193	194	199

* [RSW3] [RSW4] is only in the indoor unit.

3. Setting addresses using the remote controller



1. Turn the power to the indoor side on. It is now possible to set the address of the indoor units using the remote controller.

(The addresses for the outdoor units are set using the DIP switches on the outdoor unit PCB. They cannot be set using the remote controller.)

(Refer to 「2. Manual address setting」 regarding setting of the outdoor unit addresses.)

◎ For the indoor units, two address settings are required, the 「correspondingly outdoor unit address」 for the refrigerant piping system, and the 「indoor unit address」 for the same bus line. These two addresses can be set using the remote controller.

◎ Address number 「000」 cannot be used.

2. Make the start operating with **RUN** switch.

3. Make the display 'FAN' with **OPERATION MODE** switch.

4. Push the **TEST RUN** switch. (Do within one minute after pushing **RUN** switch in step 2)

5. Push the **CHECK** switch.

You can now 「Confirm」 and 「Set addresses」. (it will take a maximum of about one minute before the address is displayed)

The address setting number is displayed in the 「TIMER」 display section.

Use 「TIMER ON」 to set the indoor unit addresses and 「TIMER OFF」 to set the correspondingly outdoor unit addresses (the display will illuminate). Refer to the table on the right.

Display	Setting address
「TIMER ON」	Indoor unit address
「TIMER OFF」	Correspondingly outdoor unit address

6. Use the **▲** and **▼** keys for the 「TIMER」 to set the addresses.

▲ increase the address number, and **▼** decreases it.

The display flashes when the address number is being changed.

7. Push the **RESERVE** switch to complete address setting.

The display will stop flashing and stay lit.

8. When the correspondingly outdoor unit address is set,

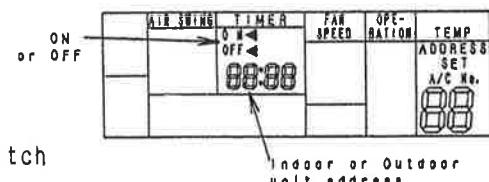
「ON」 display is changed into 「OFF」 pushing **TIMER SET** switch at step 5, and sets as well as step 6~7.

9. Push the **CHECK** switch again and the address display will go off, and the address will be stored even when the power is switched off.

Address setting during the group control

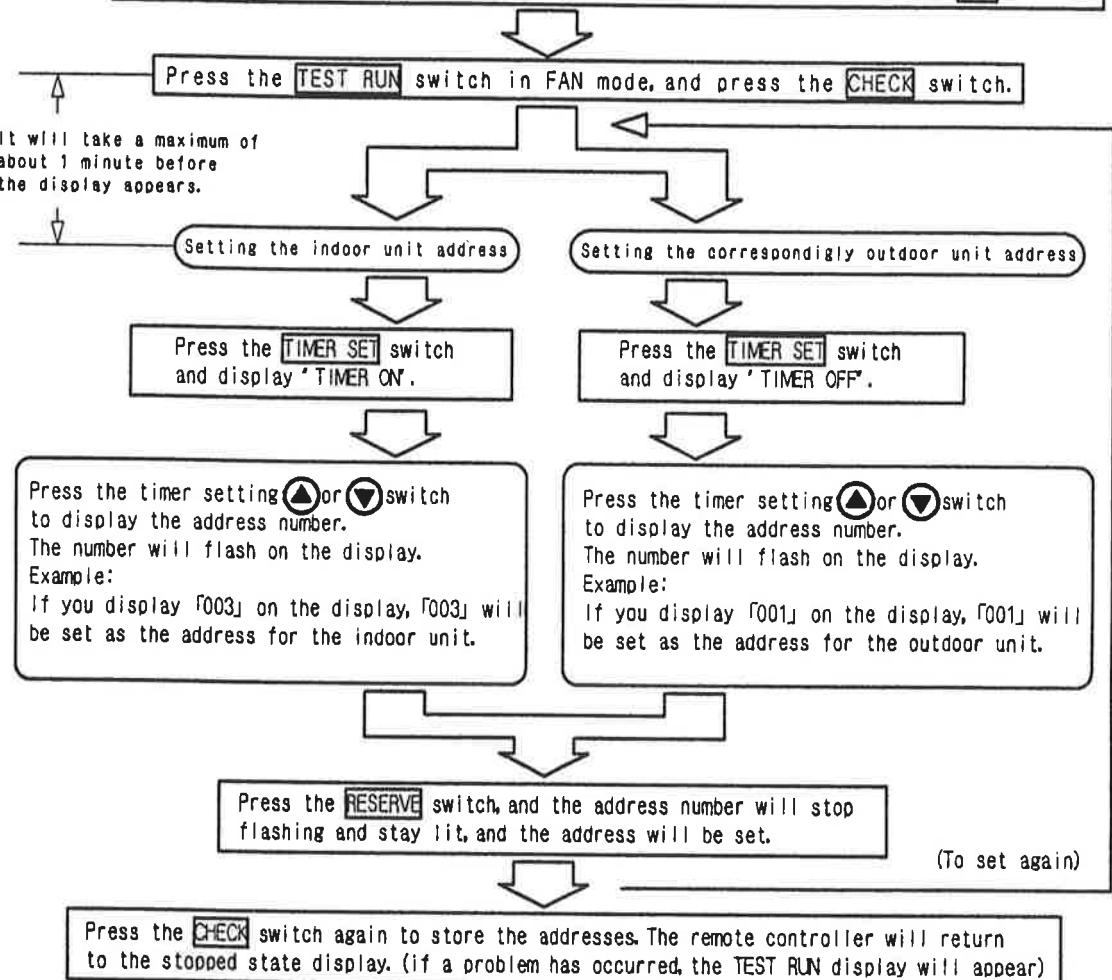
「A/C No.」 display is changed into [02]~[16] display pushing **A/C No.** switch at step 5 the above-mentioned and the address is set as well as step 6~7. Set the address of the following indoor unit one by one.

Change an address setting Do step 1 to 9 on the previous step again.



Remote controller address setting example

Turn the power to the indoor and outdoor units on, and press the **RUN** switch.



- As for work specifications of the electric wiring, read the INSTALLATION MANUAL and ELECTRIC CIRCUIT DIAGRAM.
- As for optional accessories of control system, read the ENGINEERING DATA BOOK, and each INSTRUCTION, etc.

PACKAGED AIR CONDITIONERS

OUTDOOR UNIT INSTALLATION MANUAL

REFRIGERANT
R407C

MODEL
CU-P224MX1XP CU-P280MX1XP

Precautions in terms of safety

Carry out installation work with reliability after through reading of this 'Precautions in terms of safety'.

- Precautions shown here are differentiated between **Warnings** and **Cautions**, those that have much chance for leading to significant result such as fatality or serious injury if wrong installation should be carried out are listed compiling them especially into the column of **Warnings**.

However, even in the case of items which are listed in the column of **Cautions**, such items also a chance for leading to significant result depending on the situations.

In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration



This mark means 'Caution' or 'Warning'.



This mark means 'Earth'.

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of try run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
In addition, request the customer to keep this manual for installation work together with instruction manual, engineering data and electric circuit diagram.

Warnings

- The appliance must be installed by technician, who takes into account the requirements given in ISO5149 or eventual equivalent requirements.
- As to Installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injuries due to falling of the unit.
- Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.
- Electric work shall be carried out by the person qualified as an electric worker according to 'Technical standards regarding electric installation', and to the manual for installation work, and use exclusive circuit without fail. Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.
- Wiring shall be connected securely using specified cables and fix them securely so that external force to the cables may not be transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.
- If installing inside a small room measures should be taken to prevent refrigerant levels from building up to critical concentrations in the event of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.
- Securely attach the protective covers for the outdoor unit connection cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat and fire or electric shock may result.
- If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.

Warnings

- Once installation work is complete, check that there are no refrigerant gas into the room and comes into contact with sparks or flames from a fan heater, stove or kitchen range. It will cause toxic gases to be generated.
- Every indoor and outdoor unit requires a separate power supply. Switch off all supplies before accessing any electrical part.
- Any electrical work should only be carried out by a qualified technician.
- When performing piping work do not mix air except for specified refrigerant(R407C) in cooling cycle(pipe). It causes capacity down, and risk of explosion and injury due to high tension inside cooling cycle.

Cautions

- Carry out Earthing work. Do not connect the Earth return to the gas pipe, water line pipe, lightning rod, Earth return of the telephone. Imperfection in Earth return may lead to electric shock.
- Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakages should arise and the gas builds up around the unit, such situation may lead to ignition.
- Mounting of the earth leakage breaker is required. Omission in mounting of the earth leakage breaker may lead to electric shock.
- Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.
- Position the indoor unit, outdoor units, power cords and inddot/outdoor unit connection cables so that they are at least 1 meter away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 meter.)



■ Connection of the Indoor unit

Confirm the range of the connection of the indoor unit.
Confirm the model of the indoor unit which can be connected with the catalog etc.

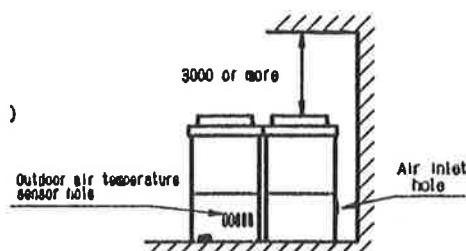
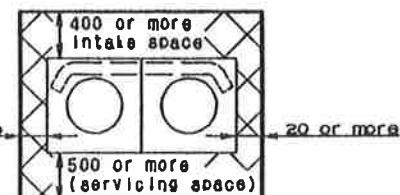
*The range of capacity which can be connected is a range of
224, 280...50~135%
of the outdoor unit capacity. However, the capacity is 100%.

Outdoor model	Range of capacity which can be connected	Maximum connected indoor units
CU-P224MX1XP	112~302	12
CU-P280MX1XP	140~378	12

■ Determining the outdoor unit installation location

Install in a location that fits the conditions described below after gaining approval from the customer.

1. The installation site must have good ventilation so that discharged hot and cold air does not accumulate.
 2. The site must be safe and level, and it must be able to adequately bear the unit's weight and withstand vibration.
 3. It should be far enough away so that hot or cold air does not blow directly onto animals or plants.
 4. The area must be free of flammable gases and corrosive gases.
 5. Discharged air and noise generated by the outdoor unit must not cause any nuisance to surrounding areas.
 6. There should be sufficient space available so that maintenance and servicing can be carried out easily. (Refer to the illustration at right.)
- In order to prevent short circuits and to ensure adequate ventilation, leave a minimum of 400 mm free space on the intake side. (The upper space of 3 m or more is recommended.)
 - Do not let warm or cold air blow onto the outdoor air detection holes(slit holes)on the front panel.
 - Do not let warm air blow and closed onto the outdoor air detection holes(slit holes)on the right side panel.
 - And leave a minimum of 20mm free space at the side panel.
 - Leave a minimum of 500mm free space at the front panel in order to facilitate maintenance and servicing.



Other points to note

1. If installing in a location where snow often falls, take the following measures as follows.
 - Raise the height of the base to prevent snow from accumulating around the intake area.
 - Attach the snow covers.

WARNING

2. Precaution against refrigerant gas leaks

The outdoor units are charged with large quantities of refrigerant. If gas leaks from the indoor units should occur, the leaked gas can accumulate inside the room and cause suffocation. Because of this, be sure to provide adequate ventilation that matches the size of the room where the indoor units are being installed.

■ Before Installation work

This product is used new refrigeration(R407C). The basic way of installation work is the same as usual, but water and impurities should be controlled more strictly than before due to characteristic of refrigerating machine oil. Therefore, selection of materials to use and processing, storing and brazing need appropriate construction and control.

1. Tools and materials.

There are tools and materials for both new refrigeration(R407C) and usual refrigeration(R22) you can use together and for either two of them you can use. Use the below for new refrigeration.

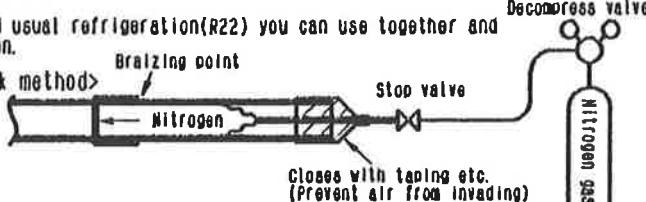
-Vacuum pump (with back flow preventer system) -Gauge manifold -Brazing point
-Gas leakage detection warning device -Charge hose <Work method>
2. Installation work.

① Brazing Work

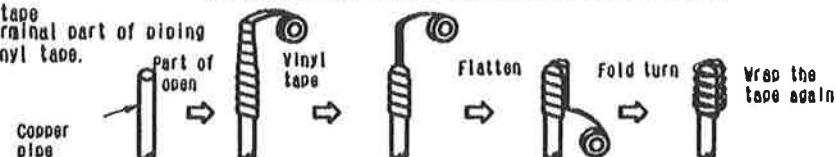
Brazing work needs replacing air inside pipe with nitrogen gas in order to prevent oxidation scale from This is called nitrogen replacement, and one of very important work in brazing refrigerant piping. (oxidation preventive is not possible to use)

② Prevention measure for refrigerant piping

Prevention measure for refrigerant piping is very important work to prevent water-dust-rubbish from getting in. All piping terminals needs prevention measure such as the below.



Place	Period of work	Prevention measure
Outside	More than 1 month	Flush
Inside	Long than 1 month	Pinch or taping



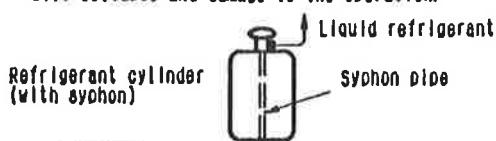
3. Vacuum pumping

The purpose of vacuum pumping work is to remove and dry air inside the piping or nitrogen at air tightness test. Perform the work carefully.

Caution Use the vacuum pump with the backflow prevention mechanism to prevent backflow of oil.

4. Refrigerant Filling

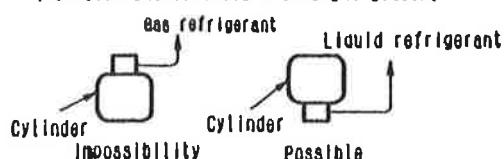
Refrigerant Filling must be done in the state of liquid refrigerant. If this is done in gas refrigerant, the balance of refrigerant system will collapse and damage to the operation.



CAUTION Do not use a 'CHARGE CYLINDER'.

For the use of gas cylinder without siphon inside, turn it upside down and use it.
(We recommend manifold with sight glass.)

Vacuumizing pump capacity
60L/min or more



Caution As a rule, please collect all existing refrigerants in the system outside the system when the refrigerant leakage occurs by the system.
After that, please fill new refrigerant of a regulated amount again.

■ Carrying and installing the outdoor units

1. Carrying

- For carrying installation, hook wire cables or belts with lengths of 7 m or more that are strong enough to support the weight of the outdoor unit onto the angle brackets at the base of the outdoor unit.
- If using wire cables, shield cloth or wood around the outdoor unit to prevent damage.

2. Installation

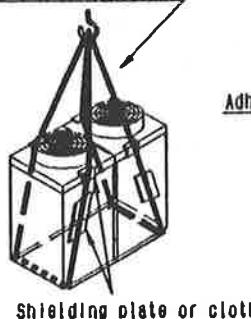
- While referring to the installation figure, place the outdoor unit onto the concrete foundation (which should have M12 foundation bolts embedded in it) and then tighten it securely into place using M12 nuts.
- If there is a possibility that vibration might be transmitted to the room, place the outdoor unit on top of rubber cushions or anti-vibration bases to absorb vibration.
- Particular care must be taken to comply with anti-noise regulations if setting the outdoor unit up close to nearby residential facilities.

3. Prevention of Alien invasion

- If there is a possibility that snow or small animals may get inside the outdoor unit, take the following countermeasures.

Unit suspension

Use two wire cables or belts which are 7 m or longer



Prevention measure of Alien invasion

Front panel slit holes
(preventing snow from getting in)

Adhesive surface

Attach one to the inside of each front panel.

Snow cover
(supplied)

Pipes

(Preventing snow and small animals from getting in)

Use tin shears or similar tool to cut the stopper plate to size and set it in place with putty (local arrangement)

Stopper plate

Putty
(local arrangement)

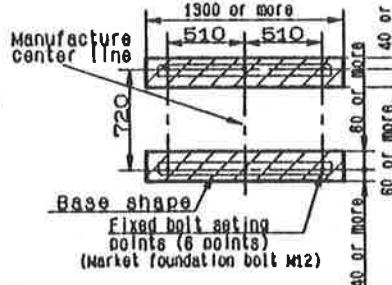
Sealing foam (supplied)
Cut as necessary to allow pipes to pass through

■ Anchor bolt positions

Foundation surface dimensions and fixing bolt positions

- *Do not use partial supports.
(All series common)

Foundation
Installation surface

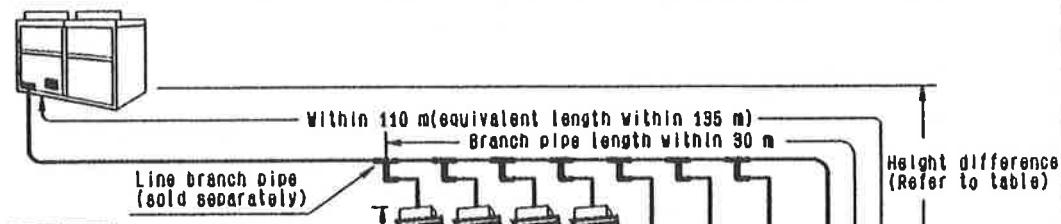


■ PIPING INSTALLATION PROCEDURE

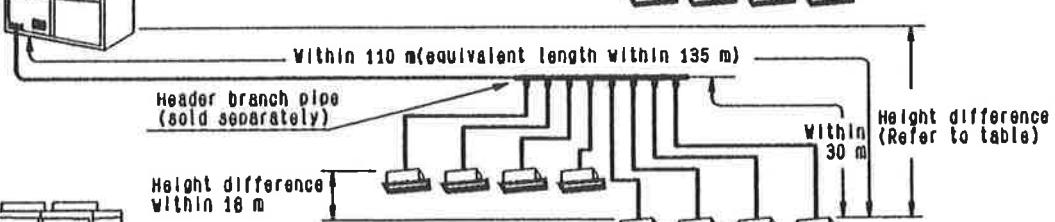
① Refrigerant piping installation procedure

- Determining the refrigerant piping method and refrigerant piping materials

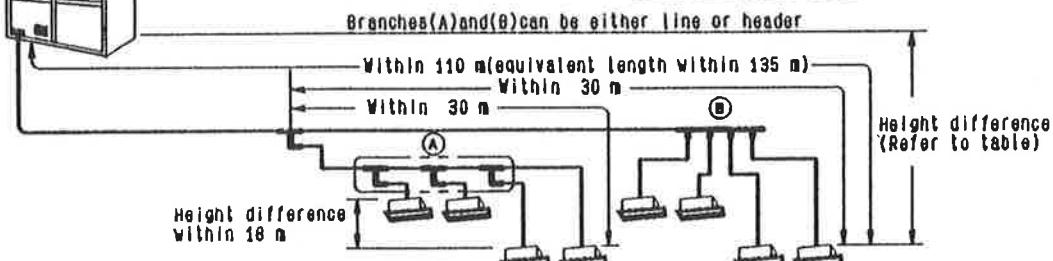
(1) Line piping method



(2) Header piping method



(3) Combination piping method



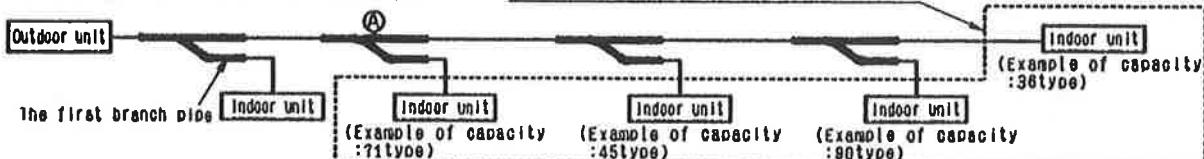
● Piping conditions

Maximum piping height difference conditions	Between indoor and outdoor units	Within 50 m when outdoor unit raised Within 40 m when outdoor unit lowered
	Between indoor units	Within 18 m
Piping length conditions	Max. distance from outdoor units to indoor units From first branch to furthest indoor unit Total actual piping extensions	Within 110 m (equivalent length 135 m) Within 30 m Within 250 m

② Outdoor unit piping method

<Selection of branch pipe>

• Selection of line branch pipe



Example) Branch pipe ① selection totals capacity in the frame.

Total capacity of all the indoor units connected to the branch pipe that you want to select, and select the pipe that matches from the table right side. With regard to selection for the branch pipe ① shown in the diagram above, the total capacity of the section enclosed in the dotted line is the region used for selection. Use this region to select the branch pipe for the successive branch pipes. Note, however, that the first branch pipe depends on the capacity of the outdoor unit.

Total capacity	Number of applied branch pipe	Number of applied branch pipe
less than 90	CZ-08PBKV3	
90 up to 199 less	CZ-18PBKV3	
199 up to 395 less	CZ-39PBKV3	

- The total capacity becomes $71+45+90+36=242$ when selecting by the example of capacity of the above figure and branch pipe ① becomes CZ-39PBKV3 from left.

• Selection of header branch pipe.

Total the number and the capacity of the indoor unit which does the branch connection, and select the branch connection in a right table.

The sealing tube attached to the branch pipe is used and sealed to the remaining place. Combine with the line branch pipe when the numbers of branches is not sufficient with the header branch pipe in a right table.

Branch numbers	Number of applied branch pipe
4	CZ-04PHKV3
6	CZ-06PHKV3
8	CZ-08PHKV3

• Selection of piping size and piping material.

Main pipe(Between from outdoor unit to the first branch pipe)

- The gas side and liquid side are the same to connected entrance of the outdoor unit diameter.
(When equivalent piping length is 90m or less.)

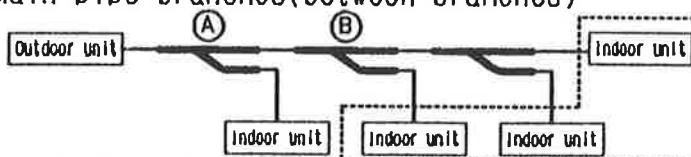
- Only the gas side main pipe should improve the size when the equivalent piping length is 90m or more. Other piping and branch pipes are untouched.

(Outside diameter x Minimum wall thickness:mm)

Outdoor unit	Gas-side main pipe	Liquid-side main pipe
224type	Φ25.4x1.2	Φ12.7x1.0
280type	Φ28.58x1.4	Φ12.7x1.0

Outdoor unit	Gas-side main pipe
224type	Φ28.58x1.4
280type	Φ31.8x1.4

Main pipe branches(between branches)



(Outside diameter x Minimum wall thickness:mm)

Total capacity	Gas-side	Liquid-side
less than 56	Φ12.7x1.0	Φ9.52x1.0
56 up to 90 less	Φ15.88x1.0	Φ9.52x1.0
90 up to 199 less	Φ19.05x1.0	Φ12.7x1.0
199 up to 395 less	Φ25.4x1.2	Φ12.7x1.0

- In order to calculate the diameter of the main branch pipe which runs in between the two branch pipes, first calculate the total capacity of all of the indoor units which are downstream from the branch pipes of the downstream side.

Next, use this calculated value to obtain the pipe diameter from the table at right.

In the diagram above, the main branch pipe between branch pipes ④ and ⑤ should be selected based on the total capacity of the indoor units inside the dotted line.

(Outside diameter x Minimum wall thickness:mm)

Indoor unit capacity	Gas-side	Liquid-side
22type	Φ12.7x1.0	Φ9.52x1.0
28type	Φ15.88x1.0	Φ9.52x1.0
36type	Φ19.05x1.0	Φ12.7x1.0
45type	Φ25.4x1.2	Φ12.7x1.0

The branch pipe between to the indoor unit

- Used to connected piping size of the indoor unit matched.

Pipe out. dia.	Torque	Notes
Φ12.7	55N·m (580kgf·cm)	Liquid-side service valve

■ PIPING WORK OUTLINE

(1)Liquid-side piping connection

Flare the liquid-side pipe, and connect it to the liquid-side service valve. Tighten the flare nut to the torque value given in the table on the right.

(2)Gas-side piping connection

Braise an elbow or socket(attached to 280 type only)onto the gas-side service valve, taking note of the direction of the pipe.

*When braising, cool the valve using a wet cloth to ensure that heat is not transferred to the valve body.

(3) Branch pipe connection

Refer to the attached installation manual regarding connection of the branch kit that you have selected(purchased separately).

(4) Piping insulation

Use the insulation material specified on the table on the right to insulate all piping and branches.

*Insulate the piping after you have completed the air-tightness Integrity check(described later).

(5) Points of caution regarding piping installation

When brazing

After remove all dirt and dust, and braze under a stream of nitrogen gas (to prevent oxidization scale from forming inside the piping).

When the height difference between indoor and outdoor unit exceeds 30 m:

When the height difference between Indoor and outdoor unit will exceed 30 m, an oil trap must be installed on the gas suction pipe(refer to the diagram on the right). Install one oil trap at a distance of 30 m from the outdoor unit, and at 10 m intervals thereafter.

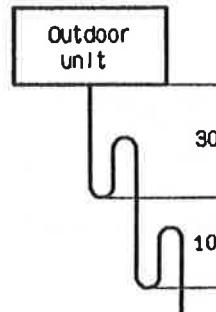
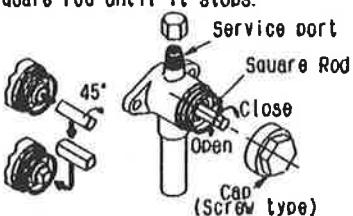
Service valve operation

- Remove the cap, and turn the square rod with monkey wrench to open and close it.
- To fully open or close the valve, rotate the square rod until it stops.

When fully open:

- After inserting the square rod to the rear as described in the outline below, and replace the cap in its original position.

- (1) Pull out the square rod.
- (2) Turn 45 degrees.
- (3) Insert the square rod to the rear once more.

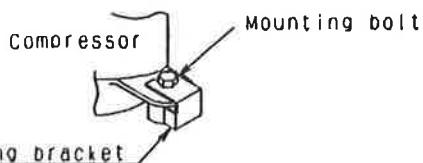


CAUTION

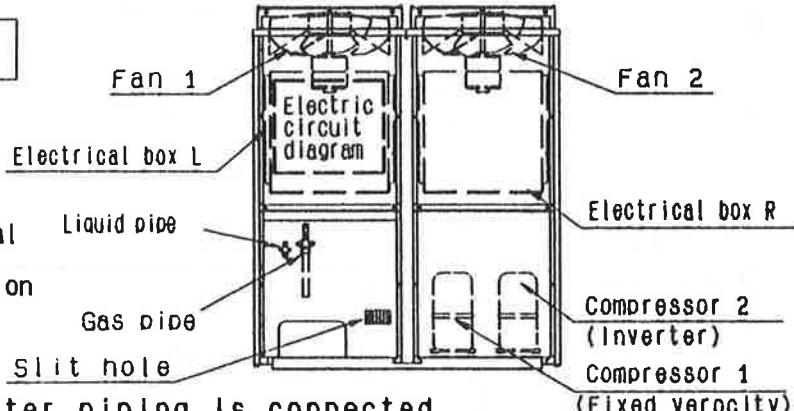
- Be sure to remove the compressor fixing brackets.

- To remove, loosen the compressor mounting bolts and then pull sideways.

- After removing, be sure to tighten the compressor mounting bolts again.



Principle parts are in the locations shown in the diagram below.



■ Procedures to carry out after piping is connected

(1) Checking of the airtightness, the state of the vacuuming and additional charging of refrigerant

Check the airtightness along the dotted lines in the illustration, vacuuming and the charging of additional refrigerant in that order.

① Airtightness inspection(with service valve closed)

Gas used:Nitrogen

Test pressure:3.3MPa(33.7kgf/cm²)

Test time:24hours

Check that there are no gas leaks under the conditions given above.

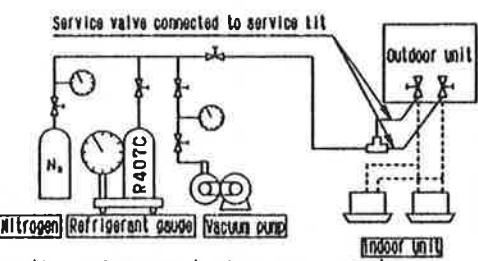
② Vacuuming

③ Charging of additional refrigerant

Refer to Refrigerant additional charging amount below for details on the refrigerant charging amount.

Attention when compressor is detached

It is very easy to set fire to the oil,etc.



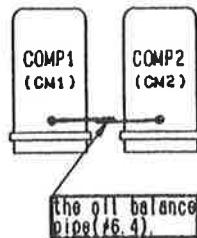
Replacement of compressor

- ① Take out the internal refrigerant of the units.
- ② Take off the discharge pipe and oil return pipe. (release pressure)
- ③ Remove the oil balance pipe.
- ④ Remove the compressor fixing bolt and draw it out forward.
The compressor can be detached according to the above-mentioned procedure.
(If you remove the oil balance pipe first, the internal oil may gush.)

Attention when serving and asking

High temperature part attention - Immediately after stopping the compressor and the exhalation tube are hot.
Only carry out work with gloves or after leaving it to cool.

Wiring protection - When using a gas burner to carry out work, use a heat shield to prevent damage to the wiring.



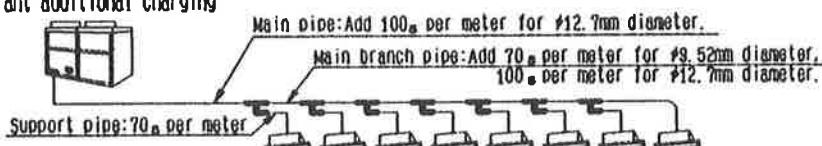
■ ADDITIONAL REFRIGERANT CHARGING AMOUNT

Refer to the table below to calculate the refrigerant additional charging amount based to the liquid side pipe diameter and the actual pipe length.

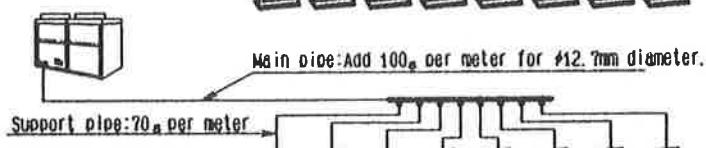
Liquid side pipe diameter	#9.52(3/8")	#12.7(1/2")
Refrigerant additional charging amount per meter of pipe	70g	100g

- Example of refrigerant additional charging

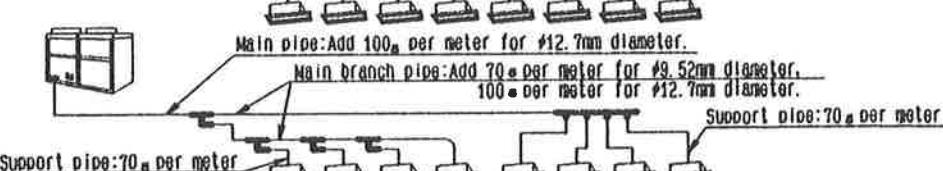
Line piping method



Header piping method



Combination method



■ SAFETY NOTE

Electrical wiring be certain to follow the relevant regulation when performing electrical installation.

- Refer to the circuit diagrams for details regarding electrical connections for the indoor and outdoor units.
- Refer to the electrical specifications regarding the thickness of the power wiring.



Warning

All electrical work must be performed by qualified staff in accordance with the supplied installation manual, and to appropriate technical standards for electrical equipment and internal wiring, and the system must have its own independent circuit. Incorrect wiring and insufficient power supply circuit capacity can cause risk of fire and electrocution.

The appliance must be installed after an all poles installation switch with a contact separation of at least 3 mm.

All wiring must be done using the stipulated cables, and cables must be securely connected to terminals in such a way as to ensure that no external force is applied to them. Loose connections can cause risk of fire.



Caution

Do not earth the equipment to gas or water pipes, or connect the earth to lightning rods, telephone earths, or to the earths of devices that have earth leakage current breakers installed (this is prohibited by law).

The system must be earthed correctly in accordance with local regulations. Use an earth screw, and ensure that the wiring thickness is as per the electrical specifications. The resistance to earth must be less than 10Ω.

The main outdoor unit power supply must have an over-current protector, a circuit breaker, and an earth leak breaker installed. If this equipment is not installed, risk of electrocution will exist.

A main power supply is required for both the indoor and outdoor units. Be certain to take the power from electrical distribution boards set up especially for that purpose.

Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires. (The earth line is also similar)

Terminal connection screws in the control box may vibrate loose during transport. Check that they are securely installed before use.

Refer to the electrical specifications with regard to the wire thickness, capacity of the over-current protection devices, and circuit breakers.

When performing the main power supply wiring, fasten the wiring using the installation cord fast on the main unit in such a way that there is no physical strain on the internal power terminals (follow the appropriate regulations regarding installation of electrical parts).

Accessory terminal block riveting

Check that there are no poor electrical connections due to faulty riveting.

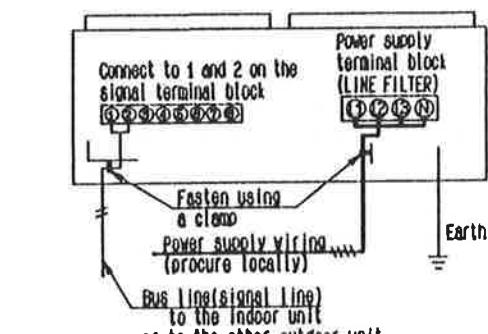
To prevent incorrect operation due to electrical noise, ensure that the signal wiring is at least 30cm from the power wiring at all times.

Use the cord clamps to install the electrical wiring in such a way that it does not touch the refrigerant piping.

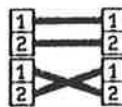
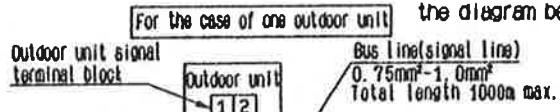
Perform all wiring and earthing work in accordance with the appropriate standards.

- Use a standard power cord for Europe (such as H05RN-F or H07RN-F which conforms to CENELEC(HAR)rating specifications.)

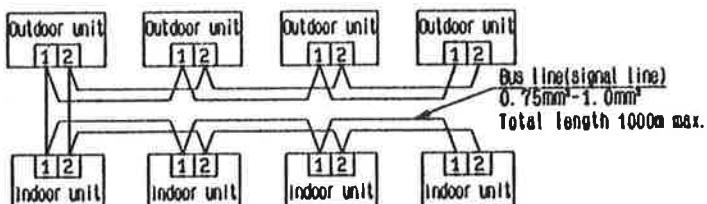
■ Power supply and bus line communication wiring(signal wiring)layout



The signal wiring for the indoor and outdoor units has no polarity, and can be connected in any order as shown in the diagram below.

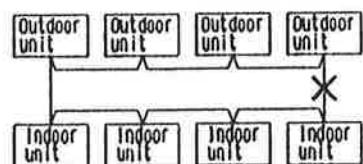


For the case of multiple outdoor units

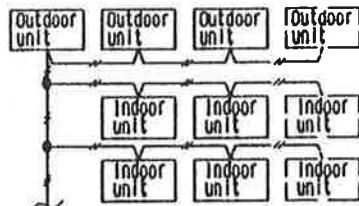


- 1) Up to 200 indoor units can be connected with both indoor unit systems and outdoor unit systems bridge-wired using two-wire signal cable. If the total number of indoor units, outdoor units, and remote control units exceeds 120 units, an expansion gateway (CZ-01GWM51* (sold separately)) is required.
- 2) The signal wiring can also be connected as shown in the diagram on the left, but loop wiring is not possible.

● Loop wiring prohibited



Loops in the signal wiring are prohibited (the dashed lines in the diagram on the left), as they will result in damage to the circuit boards.



● Power supply specifications

Model name	Earth leakage breaker	Fuse	Minimum wire size and length
CU-P224MX1XP	30A 100mA 0.1s or less	30A	6mm ² , 18m
CU-P280MX1XP	40A 100mA 0.1s or less	40A	6mm ² , 14m

● Control signal cables specification (1 pair(2 wires) no shield)

- Instrumentation cable 0.75mm²~1.0mm²
- Resistance: within 27Ω/km
- Static capacity: within 60nF/km

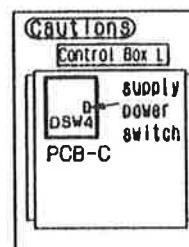
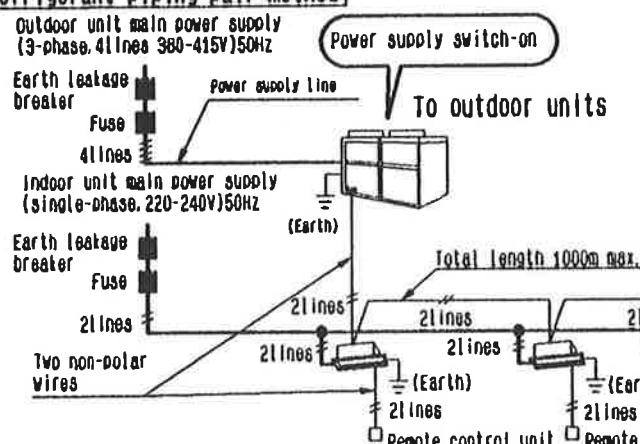
Use a standard cord for Europe which conforms to CENELEC(HAR) rating specifications.

The use of cable with shield is a strict prohibition.

■ CONNECTION OF THE ELECTRICAL WIRE

Connection examples: The method used to connect the control cables can be selected from the following two methods.

● Refrigerant piping pair method

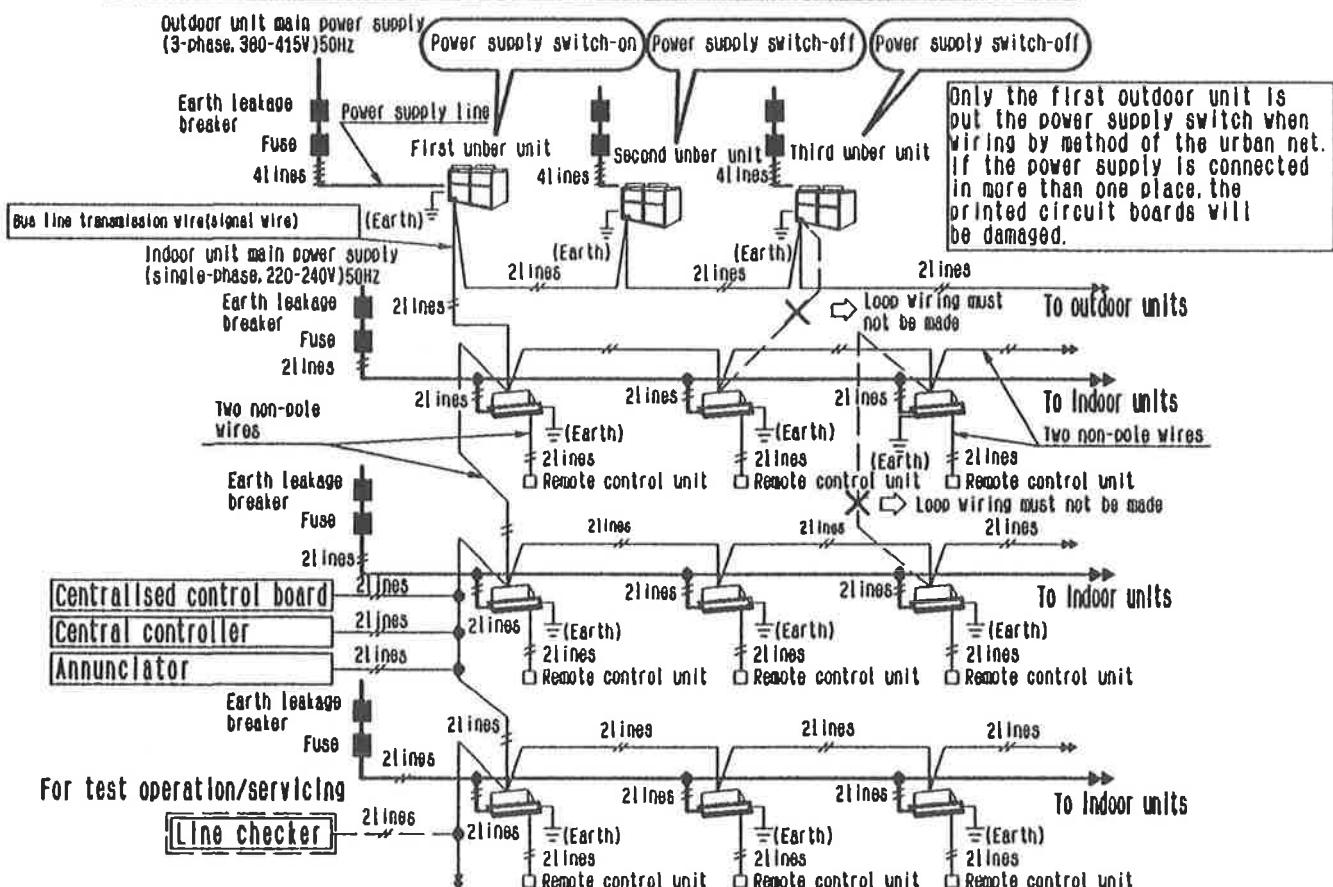


Method of supply power switch

Put the power dispatching switch of the control board before the outdoor side power supply is turned on, because it does a current drive.



● URBAN-NET method (All units can be connected to a single bus line regardless of the refrigerant pipes.)



■ Notes for when Indoor remote control is tried

Do not turn on the power supply when all installed construction is not completed.

- Put the switch box on 12 hours or more before the trial run.
(It is energized to the crankcase heater.)

- Confirm the power supply is not a antiphase. (LED in the substrate blinks in case it is antiphase.)
- Confirm whether the voltage is 342V or more when starting. (It is not possible to drive if voltage is 342V or less.)
- The trial run method is push the trial run switch within one minute after pushing the driving switch of the remote control box.

Next, select each drive mode.

- Push the trial run switch again when you end the trial run.

note1 Test the heating drive after the air conditioning drive ends.

The compressor may breakdown if done immediately after testing the heating drive first.

note2 Try for five minutes even if it is the lowest setting. (The trial run is automatically released 30 minutes later.)
(Protection occasionally operates after a few minutes after the trial run begins when heating when the air temperature is high and when air conditioning when the air temperature is low.)

■ About setting the dip switch of the printed circuit board

The length of the pipe set.

Set the dip switch [DSW1] of the printed circuit board of the outdoors.

Operation of trial run from outdoor side

See the electric circuit chart for details.

- The trial run can be operated on the indoor side and the outdoor side. However, all units which include the indoor unit can be tried when doing from the outdoor unit side. (When this is done by the indoor remote control, only the operated unit can be tried.)
- It is possible to stop by remote control when operating the indoor remote control.
- Protection occasionally operates after a few minutes after the trial run begins when heating when the air temperature is high and when air conditioning when the air temperature is low.

■ About the external input terminal

- The drive control of the right note becomes possible by connecting no-voltage A point of contact with external input terminal.

See the electric circuit chart for details.

- Control of low noise at nighttime
- Demand control
- Snowfall correspondence control

Maintenance of air-conditioning equipment

The design, construction, and selection of materials for parts of this product that handle high-pressure gas have been done in accordance with the laws relating to high-pressure equipment, and pressure testing.

Model type	CU-P224MX1XP	CU-P280MX1XP
Refrigerant	R407C	
Refrigerant charge amount kg	11.0	12.0
Design pressure (high-pressure section) MPa (kgf/cm ²)	3.3(33.7)	
(low-pressure section) MPa (kgf/cm ²)	1.6(16.3)	
Pressure cut off device setting pressure MPa (kgf/cm ²)	3.1(31.6)	
Compressor	No. of units 2	3.4(34.7)
Condenser	No. of units 1	3.3(33.7)
Liquid receiver	No. of units 1	3.3(33.7) Fusible plug radius mm 75
Other vessels (accumulator)	No. of units 1	1.6(16.3)
Manufacturer	Matsushita Refrigeration Company	

For all refrigerant piping work done with locally procured piping, perform an air-tightness test at above the design pressure (3.3MPa(33.7kgf/cm²)).

CHECKS TO BE CONDUCTED AFTER INSTALLATION WORK IS COMPLETE

- When installation work is complete, perform an operation test check, and measure, record and store the operating characteristics of the system
- Items to check before performing test operation
 - Are the current leakage breaker capacity, wiring thickness, wiring length, and tightening torque of the screws as stipulated?
 - Is the electrical resistance at least 1MΩ?
 - Has the earthing construction been performed?
 - Are the drain piping connections, and thermal insulation of the indoor unit piping such that water leaks will not occur?
 - Has the refrigerant piping thermal insulation work for the gas piping, liquid piping, and equalizing hydraulic piping been done separately so that there will be no water leakage?
 - Is the air-conditioner unit firmly secured to the decorative panel so that water leaks due to leaking cold air will not occur?
 - Are the indoor units and outdoor units installed securely, and firmly bolted down?
 - Have the refrigerant piping connections been done in such a way that there are no gas leaks?
 - Have all fastening fixtures been removed from the compressors, and the screws firmly fastened in their original positions?
- Perform the test run check as per the test run check sheet.
- The following items must be measured and checked: room temperature, atmospheric temperature, suction inlet temperature, discharge temperature, air flow rate, air flow amount, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperatures, and air tightness pressure.
- With regard to construction and external appearance, check the following items.
 - Is the discharged air short circuiting?
 - Is the drain water flowing smoothly?
 - Is the thermal insulation installed securely (refrigerant, gas, and equalizing hydraulic piping)?
 - Are all connection screws tightly secured (refer to the right figure)?
 - Refrigerant is not leaking?
 - Have you checked the switch operations of the outdoor unit PCB?
 - Has all wiring been done correctly?
 - Has power supply switch DSW4 (outdoor unit only) been turned on to bus line transmission line 1 only? (make sure that there are not two or more turned on)
- The attached test run check sheet is the original. If there are more than nine indoor units connected, make a copy of it.

Screw diameter	Fixed torque (N·cm/lbf·cm)
M4	157~196 (16~20)
M5	196~245 (20~25)
M6	245~294 (25~30)
M8	500~647 (60~85)

Delivery acceptance by end users

- When making delivery to end users, explain that results of the test run sheet, and show that there were no problems. Be certain to have the end user and installation personnel fill in their names in the space provided and hand the instruction manual for the indoor unit to the end user. We recommend that you make a contract with the end user with regard to maintenance of the following items.

User check points: _____ • Filter and grill cleaning

Checks to be done by professionals _____ • External cleaning

• Equipment operating condition

• Cleaning of drain piping

• Cleaning of heat exchangers

• Rust prevention treatment

Optional Input

It is possible to select the following optional control.

Connect no-voltage point of contact between the following terminal number on the terminal board for Control Circuit (Im).

Optional control	Terminal number	Control specifications
Nighttime low noise	(3) and (4)	The compressor operating frequency and fan operating time are reduced during cooling operation.
*1 * DEMAND A*	(5) and (6)	All compressors are stopped. (Forced thermostatic off mode)
*1 * DEMAND B*	(7) and (8)	The upper limit of compressor capacity is limited to about 3/4 (75%).

*2 Snowfall | (5) and (6) It is possible to operate for snowfall by removing the short-circuit connector of CN9 on the printed circuit board. When the outdoor air temperature is low, the fan operate intermittently during snowfall.

*1. Please don't take off the short-circuit connector of CN9-1, 2 (PCB-C) when 'DEMAND' control. (Factory set.)

*2. 'Snowfall control' is not used together with 'DEMAND A' and 'DEMAND B'.

Important

Note the following with regard to the DIP switches SW1 on the control printed circuit board (PCB-C).

To ensure correct operation, read the following.

If the switches are not set, operation is not possible.

**Setting for test run**

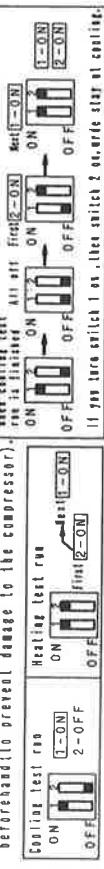
Note this setting on DSW1 of the outdoor units.

The setting is done using switches 1 and 2 (set to off at time of shipment).

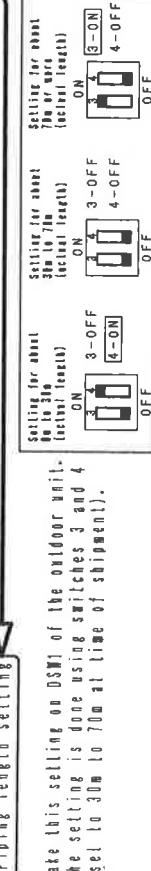
Note: If you will perform test run, operate the unit in cooling mode for at least five minutes beforehand to prevent damage to the compressor.

Note: When test run is complete, be certain to set DSW1 switches 1 and 2 back to off.

(Failure to observe this note may result in fault.)



When performing heating test operation when the outside temperature is high, or cooling test operation when the outside temperature is low, the protection circuit may sometimes operate within a few minutes.

Piping length setting

Note this setting on DSW1 of the outdoor unit. The setting is done using switches 3 and 4 (set to 30M to 70M at time of shipment).

If you connect it on other units as well, damage to the equipment may occur.

CAUTION

1. If you intend to perform checks of maintenance, shut the power off, and do not touch any of the charged parts for at least five minutes. It takes few minutes for the condenser to discharge.

2. The equipment must be earthed to prevent faulty operation, and to protect users against the risk of electric shock. The equipment must be earthed correctly in accordance with local regulations.

3. Turn on power supply to outdoor unit at least 12 hours before test operating for to run current through the electric heater.

Important

Re-executing automatic address.

With the power on, press SW1 for more than four seconds. This will automatically inform the setting of address for the indoor units again.

Setting for emergency compressor operation

Where abnormality is caused in the Compressor, by setting the DSW2 switches 7 and 8.

This is Emergency operation which cutting off the abnormal compressor from control circuit.

If the switches are not set, operation is not possible.

* DSW2 switches 7 and 8 is used for emergency operation only.

After repair of abnormal compressor, set the DSW2 switches 7 and 8 to off (normal operation).

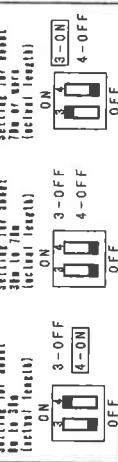
Please refer our Technical data for details of DSW2 switches 4, 5 and 6.

* DSW2 switch 1 and 2 is set at the factory for outdoor unit capacity setting.
Do not change DSW2 switches 1 and 2.

Setting of supply power

To ensure correct operation, when the wiring construction work is complete, set the supply power switch (SW4) on Control Printed Circuit Board as shown in the diagram on the right.

However, when all indoor units and outdoor units are connected to the bus line using URBAN NET, set the supply power switch (ON) on the first outdoor unit only.



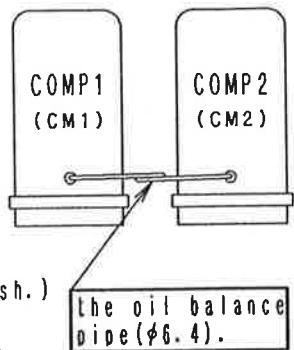
Setting for about 3m to 7m (actual length)
ON 3-ON
OFF 4-OFF

CAUTION FOR REMOVING OF COMPRESSOR

Be careful of a burn and a fire, etc.

Replacement of compressor

- ① Take out the internal refrigerant of the units.
- ② Take off the discharge pipe and suction pipe.
(release pressure)
- ③ Remove the oil balance pipe.
- ④ Remove the compressor fixing bolt and draw it out forward.
The compressor can be detached according to the above-mentioned procedure.
(If you remove the oil balance pipe first, the internal oil may gush.)



Note in repair and maintenance

High temperature part attention

- After operation, the compressor and the discharge pipe are high temperature.

Wiring scorch prevention

- Use skin gloves or allow the unit to cool when working.
- Use a cover board on hand or keep away from the welding part to prevent burning wires by the flame when the gas burner is used.

PACKAGED AIR CONDITIONERS

CASSETTE TYPE INSTALLATION MANUAL

DM SERIES

REFRIGERANT
R407C

Type	Model Name	Type	Model Name	Type	Model Name	Type	Model Name
28	CS-P28DM1HP						

Precautions in terms of safety

Carry out installation work with reliability after throughout reading of this 'Precautions in terms of safety'.

- Precautions shown here are differentiated between **Warnings** and **Cautions**, those that have much chance for leading to significant result such as fatality or serious injury if wrong installation should be carried out are listed compiling them especially into the column of **Warnings**.

However, even in the case of items which are listed in the column of **Cautions**, such items also a chance for leading to significant result depending on the situations.

In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration

▲ This mark means 'Caution' or 'Warning'.

● This mark means 'Compulsion'.

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of try run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
In addition, request the customer to keep this manual for installation work together with instruction manual and electric circuit diagram.

▲ Warnings

- The appliance must be installed by technician, who takes into account the requirements given in ISO5149 or eventual equivalent requirements.
- As to installation, request the distributor or vender to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.
- Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.
- Electric work shall be carried out by the person qualified as an electric worker according to 'Technical Standards regarding electric installation', and manual for installation work, and use exclusive circuit without fail.
Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.
- Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section.
Imperfect connection and fixing leads to fire, etc.
- If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the even of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.
- Securely attach the protective covers for the outdoor unit connection cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.
- Every indoor and outdoor unit requires a separate power supply. Switch off all supplies before accessing any electrical part.

▲ Warnings

- If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.
- Once installation work is complete, check that there are no refrigerant gas into the room and comes into contact with sparks or flames from a fan heater, stove or kitchen range; it will cause toxic gases to be generated.
- When performing piping work do not mix air except for specified refrigerant(R407C) in refrigeration cycle, it causes capacity down, and risk of explosion and injury due to high tension inside refrigeration cycle.
- Any electrical work should only be carried out by a qualified technician.

▲ Cautions

- Carry out Earthing work.
Do not connect the Earth return to the gas pipe, water line pipe, lightening rod, Earth return of the telephone.
Imperfection in Earth return may lead to electric shock.
- Do not install the unit at the place where the possibility of inflammable gas leakage exists.
If such gas leakages should arise and the gas builds up around the unit, such situation may lead to ignition.
- Mounting of the earth leakage breaker is required.
Omission in mounting of the earth leakage breaker may lead to electric shock.
- Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation.
Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.
- Position the indoor unit, outdoor units, power cords and indoor/outdoor unit connection cables so that they are at least 1 meter away from televisions and radios.
This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 meter.)



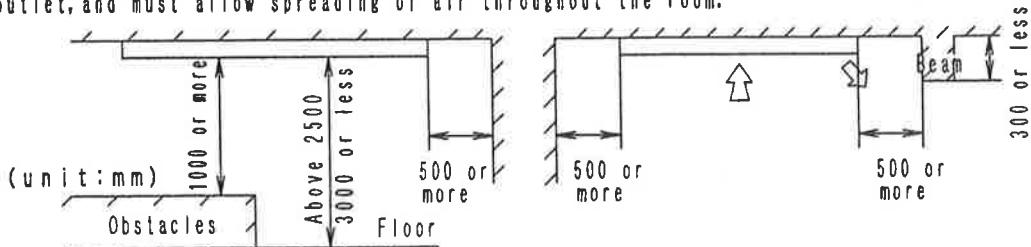
1. ACCESSORIES PACKED IN THE INDOOR UNIT CONTAINER

Name	Q'ty	Appearance	Purpose	Name	Q'ty	Appearance	Purpose
Drain hose with a clip	1	()))))	For drain piping	Flat washer for M10	8	()	For fixing the hanging bolts
Heat insulator	1	() ()	For insulating refrigerant pipe joint	Set screw of paper template	4	() ()	Screw M5
Band	2	()	For fastening the heat insulator				

2. SELECTING THE LOCATION OF THE INDOOR UNIT

Provide a check port on the piping side ceiling for repair and maintenance.

- Install the indoor unit the following conditions are satisfied, after receiving customer approval.
 1. The indoor unit must keep a maintenance space.
 2. The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spreading of air throughout the room.



*If the height from floor to ceiling exceeds three meters, air flow distribution deteriorates and the effect is decreased.

Warning

3. The installation position must be able to support a load four times the indoor unit weight.

4. The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
5. The indoor unit must allow easy draining.
6. The indoor unit must allow easy connection to the outdoor unit.
7. Place assuring the height in the ceiling shown in the below.
8. The indoor unit must be at least 3m away from any noise-generating equipment.
The electrical wiring must be shielded with a steel conduit.
9. If the power supply is subject to noise generation, add a suppressor.
10. Do not install the indoor unit in a laundry. Electric shocks may result

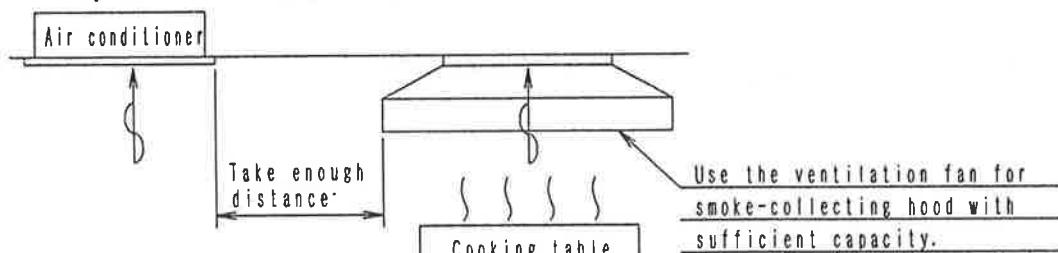
Height in the ceiling
310mm or more

NOTE ● Thoroughly study the following installation locations:

1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the turbo fan, the fin of the heatexchanger and the drain pump, resulting in heat exchange reduction, spraying, dispersing of water drops, drain pump malfunction, etc.

In these cases, take the following actions:

- Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
- Make enough distance from cooking room to install the air conditioner in such place where it may not suck in oily steam.



2. Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.
3. Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
4. Avoid places where sulfurous acid gas or corrosive gas is generated.
5. Avoid places near high frequency generators.

3. INSTALLATION OF INDOOR UNIT

This air conditioner uses a drain up motor.
Horizontally install the unit using a level gauge.

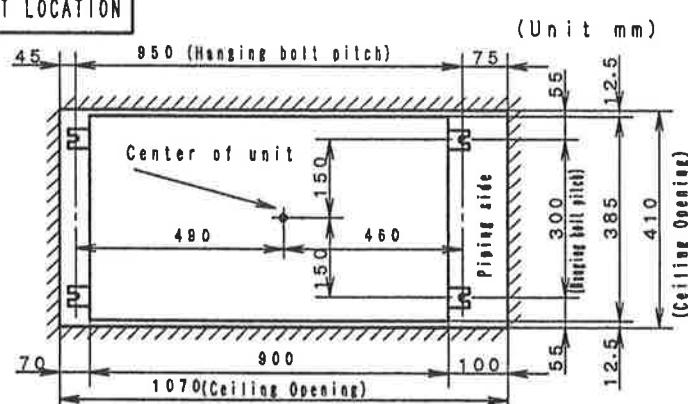
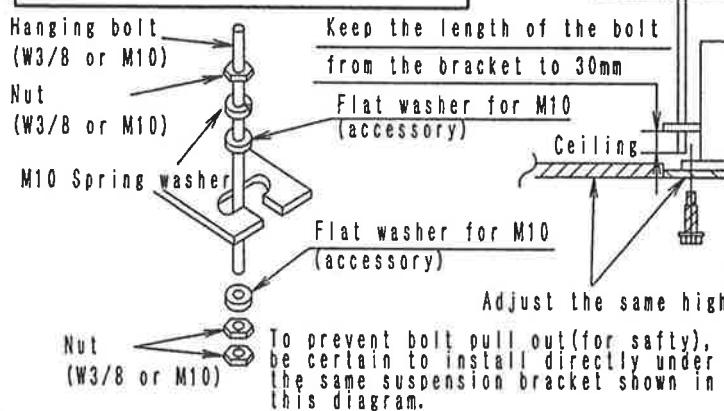
CEILING OPENING DIMENSIONS AND HANGING BOLT LOCATION

The paper model for installation is extended according to temperature and humidity.
Check on dimensions in using.

Caution During the installation, care must be taken not to damage electric wires.

- The dimensions of the paper model for installing are the same as those of the ceiling opening dimensions.
- Be sure to discuss the ceiling drilling work with the workers concerned.

POSITIONS OF AIR CONDITIONER BODY AND CEILING SURFACE



⚠ Warning Tighten the nut and bolt to prevent unit falling

Open the ceiling board along the outer edge of the paper model.

4. REFRIGERANT PIPING

Refrigerant piping is particularly important. Refrigeration cycle of the separate type air conditioners is accomplished by perfect work.

1. Braze for piping

- a. Execute braze before tightening the flare nut.
- b. Braze must be executed while blowing nitrogen gas.
(This prevents generation of oxidized scale in copper pipe.)

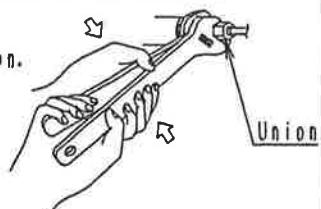
2. Amount of refrigerant

Before shipped at the factory, the air conditioner (outdoor) is charged with refrigerant, the amount of which depends on the type of the air conditioner and is indicated on the name plate (outdoor).

3. Additional charging.

Caution As to refrigerant amount, see the manual for installation work of outdoor unit.

4. When there is a lot of brazeings for long piping, install a strainer midway of the piping.
(the strainer is locally supplied.)
5. Use clean copper pipe with inner wall surface free from mist and dust.
Blow nitrogen gas or air to blow off dust in the pipe before connection.
6. Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times.
(This will result in hardening the pipe.)
7. After deforming the piping, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.
8. Connect pipe to the service valve which is located below the outdoor unit.
9. After completed the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.



CAUTION

Use two wrenches and tighten with regular torque.

Flare nut fastening torque N·m(kgf·cm)	
Φ9.52mm	42 (430)
Φ12.7mm	55 (560)

Model	Liquid side piping	Gas side piping
P28 type	Φ9.52mm	Φ12.7 mm

Vacuum drying

After completing the piping connection, execute vacuum drying for the connecting piping and the indoor unit. The Vacuum drying must be carried out using the service ports of both the liquid and gas side valves.

5. INDOOR UNIT DRAIN PIPING

- Drain piping must have down-slope (1/50 to 1/100); be sure not to provide up-and-downslope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port at indoor unit.
- The outside diameter of the drain connection at the indoor unit is 32mm.

Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings

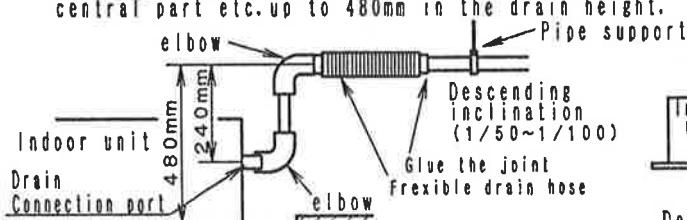
- Be sure to execute heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 8 mm

Please install the trap.

Because the stink invades when the drain piping is drained directly to drainage.

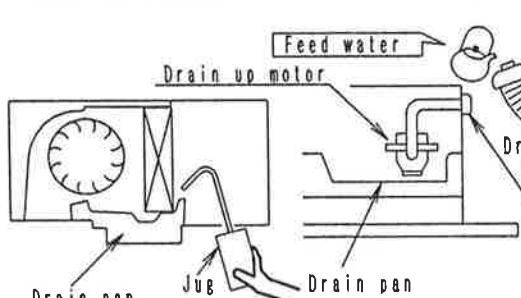
- It is possible when a lot of its inclination are necessary in the installation of a floor central part etc. up to 480mm in the drain height.
- Place and put the head as shown in the figure below when you lay two or more units



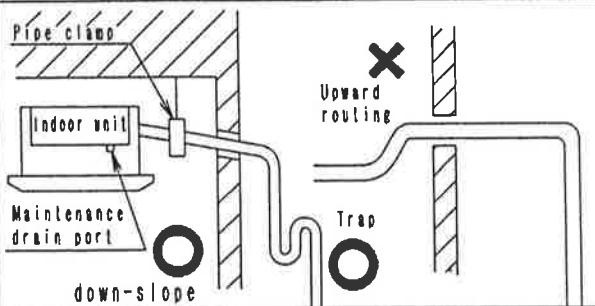
Be start-up from the unit body drain connection port with the elbow. (Arrange the elbow at the local.)

Drain test

The air conditioner uses a drain up motor to drain water. Use the following procedure to test the drain up motor operation:



- Connect the main drain pipe to exterior and leave it provisionally until the test comes to an end.
- Feed water to the flexible drain hose and check the piping for leakage.
- Be sure to check the drain up motor for normal operating and noise when electric wiring is complete.
- When the test is complete, connect the flexible drain hose to the drain port on the indoor unit.



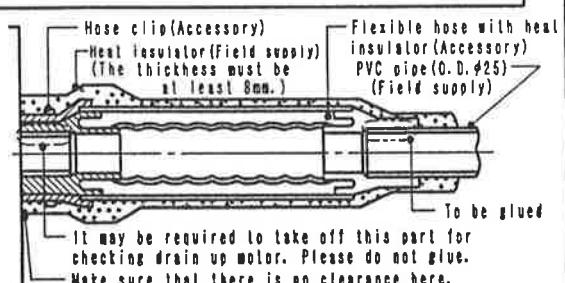
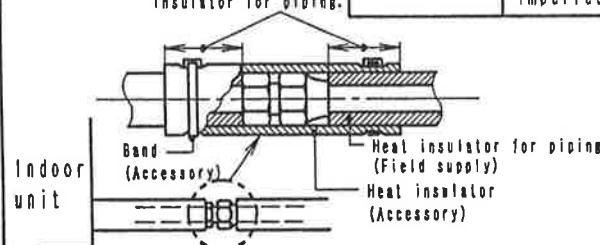
6. HEAT INSULATION

1. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance. (over 120 degree C).

Overlap with heat insulator for piping.



Be sure to execute heat insulation on the drain and gas piping. Imperfection in heat insulation work leads to water leakage.



2. Precautions in high humidity circumstance.

This air conditioner has been tested according to the

"JIS Standard Conditions with Mist" and confirmed that there is not any fault. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23 degree C), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:

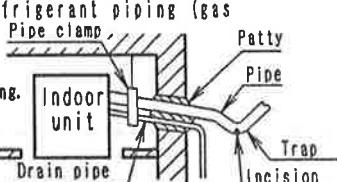
- Heat insulation material to be prepared....Adiabatic glass wool with thickness 10 to 20 mm.
- Stick glass wool on all air conditioners that are located in ceiling atmosphere.

- In addition to the normal heat insulation (thickness: more than 8 mm) for refrigerant piping (gas piping: thick piping) and drain piping, add further 10 mm to 30 mm thickness material.

Wall seal

- When the outdoor unit is installed on a higher position than the indoor unit, install the trap to not instill rain water into the wall by transmitting in piping.
- Stuff the space among piping, the electric wire, and the drain hose with "Patty" and seal the penetration wall hole. make sure that rain water not instill into the wall.

*Put the incision at the trap part of the heat insulator. (for water drain)



7. ELECTRICAL WIRING

As to main power source and cable size of outdoor unit, read the installation manual attached to the outdoor unit.

⚠ Warning

The unit must be installed in accordance with applicable national and local regulations. The unit installed by a professional installer must be supplied from a dedicated electrical circuit. All electric work must be carried out by a qualified technician according to proper technical standards for electrical work and according to installation manual for installation work. If circuits with insufficient capacity are used, or if electrical work is not carried out properly, electric shocks or fire may result.

⚠ Caution

Be sure to install a leakage current breaker or circuit breaker to the main power supply. otherwise electric shocks may result.

⚠ Caution

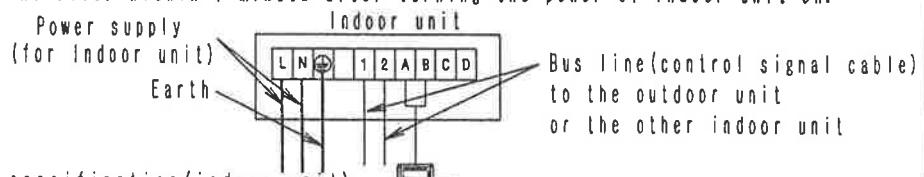
Be sure to connect the unit to secure earth connection. (with a earth resistance of 100Ω or less) If the earthing work is not carried out properly, electric shocks may result. 

⚠ Caution

Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

1. Select a power source that is capable of supplying the current required by the air conditioner.
2. Feed the power source to the unit via a distribution switch board designed for this purpose, the switch should disconnected all poles with a contact separation of at least 3 mm.
3. The terminal screws inside the control box may be loose due to vibration during transport. Check the screws for loose connection. (Running the air conditioner with loose connection can overload and damage electrical components.)
4. Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
5. Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires. (The earth line is also similar)
6. If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off again until at least 1 minute has passed.
7. Be sure to turn off the main power before installing and connecting the remote controller.
8. Do not operate remote controller within 1 minute after turning the power of indoor unit on.

CABLE SPECIFICATION



★Power supply cable specification(indoor unit)

Use a standard power cord for Europe.
(such as H05RN-F or H07RN-F which conforms to CENELEC(HAR) rating specifications.)
Minimum wire, size 2.5mm².

★Control signal cable specification(1 pair(2 wires) no shield)

Use a instrumentation cable 0.75mm²~1.0mm²
•Resistance:within 27Ω/km •Static capacity:within 60nF/km
The use of cable with shield is a strict prohibition.

★Remote controller cable specification

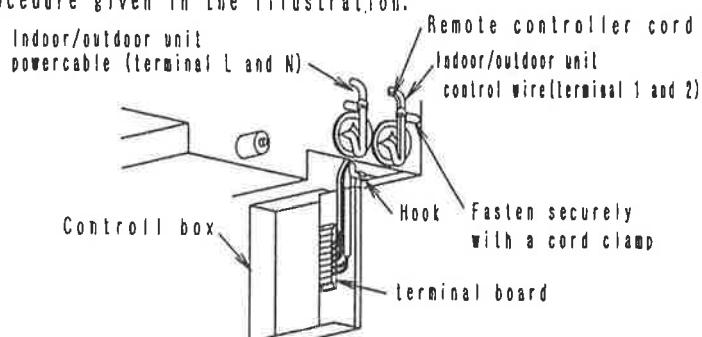
Use sheathed vinyl cord or cable with area 0.5mm² to 2mm²
•The remote controller cord can be up to 500m long.

For details the cable connection, please refer to the outdoor unit installation manual.

} Use a standard cord for Europe which conforms to CENELEC(HAR) rating specifications.

CONNECTING THE WIRES TO THE CONTROL BOX

- Remove a one mounting screw, remove the control box cover, and then connect the wires by following the procedure given in the illustration.



Caution Make sure that screws of the terminal are free from looseness.

Caution When the supply cord is damaged it must be replaced by the manufacturer or its service agent.

8. SETTING ADDRESS OF UNIT

It is necessary to set addresses for the indoor units, the outdoor units, and the remote controllers.

If these settings are not done, the equipment will not operate correctly.

Refer to 「ADDRESS SETTING MANUAL」 affixed to the outdoor unit and 「INSTALLATION MANUAL」 affixed to the remote control for the address setting.

9. INSTALLATION OF DECORATIVE PANEL

The decorative panel has its installation direction.

Before installing the decorative panel, always remove the paper template.

1. Temporarily fix two decorative panel fixing screws(hexagon M5 screw) on the unit body.
(Tighten by amount 10 mm in length.) **A**

The fixing screws(hexagon M5 screw) are attached to the decorative panel.

2. Remove the air inlet grill from the decorative panel.
(Remove the hook for the air inlet grill cord.)

3. Hook the decorative panel key hole() on the screws fixed in step above, and slide the panel so that the screws reach the key hole edge.

4. Retighten completely ~~temporarily fixed~~ ^{temporarily fixed} screws (hexagon M5 screw).
(total 6 screws) **B**

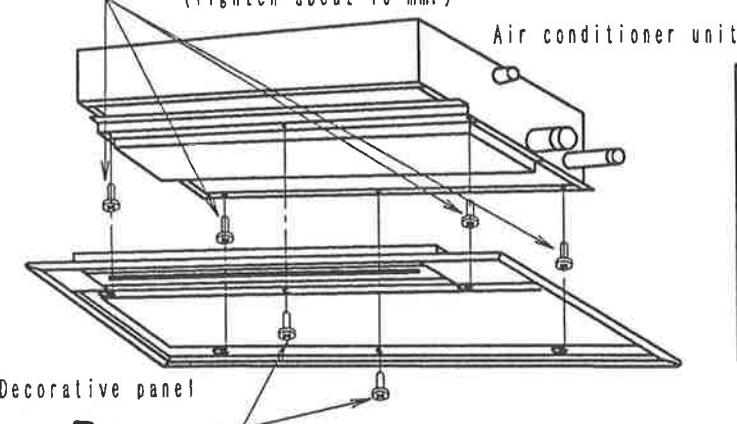
5. Connect the louver motor connector. Imperfect connection leads to fire, electric shock, etc.

6. After tightening these screws, install the air inlet grill(including the air filter).

⚠ Warning Be sure to hook the air inlet grill strings, to prevent grill falling and injury from it.

Decorative panel fixing screws
(hexagon M5×30 screw)

A (4Places) Temporarily fixing at 4 places
(Tighten about 10 mm.)



⚠ Caution

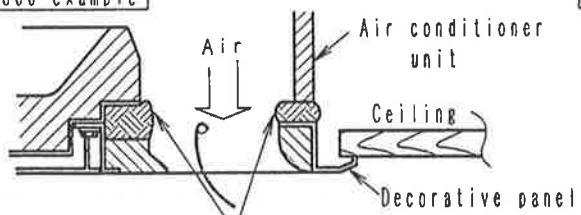
Use the decorative panel fixing screws (hexagon head screw M5×16) for accessory.
If use a longer screw than 16mm (under head length), the longer screw damages to the Drain pan, and causes water leak.

B (2Places)
Decorative panel fixing screws (hexagon M5×16 screw)

⚠ Caution

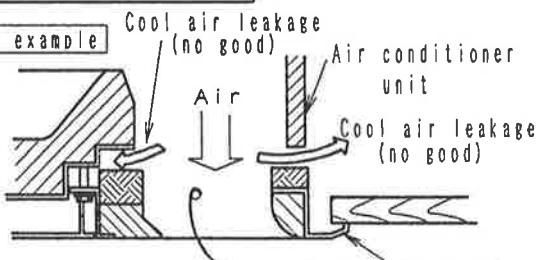
Install certainly the decorative panel.
Cool air leakage causes sweating. ⇒ Water drops fall.

Good example



Fit the insulator(this part) and be careful for cool air leakage.

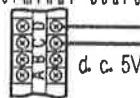
Bad example



10. AS FOR TIMER AND FAN OUTPUT

Timer setting For use of a timer(locally supplied), connect the contactor of the timer to terminals C and D.

Terminal board



Close:RUN

Open :STOP

Connect to another circuit
contact point of the timer.

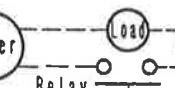
Fan output(Connect to white wires)

Connect to the wires from the connector(CNT1)on printed circuit board.

CNT1
Printed
circuit
board

Power

Relay



Connect to the connection terminal

11. PRECAUTIONS IN TEST RUN

- The initial power supply must provide at least 90% of the rated voltage. Otherwise, the air conditioner should not be operated.

- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit , refer to "TEST OPERATION" in the outdoor unit installation manual.)

- If using the remote control unit to carry out test operation , follow the procedure given below.

- First, press the run(O)button.



- Then press the TEST RUN button within 1 minute of pressing the run(O) button.

- Next , select the operation modes .

- The temperature of the indoor unit pipes will be shown on the temperature setting display . (At the start of test operation , it may take up to 1 minute for airconditioner number , switching time and other displays to appear.)



- After operation modes have been selected , momentarily stop the compressor.

- Press the run(O) button or the TEST RUN button once more to cancel test operation mode.

- NOTE1** Do not short the remote control unit wires to each other . (The protection circuit will be activated and the units will not operate .) Once the cause of the short is eliminated, normal operation will then be possible.

- NOTE2** When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. if heating mode is selected first, it may cause problems with operation of the compressor. (Heat pump model only)

- NOTE3** Test operation should be carried out for a minimum of 5 minutes . (Test operation will be canceled automatically after 30 minutes .)

- NOTE4** Test operation mode should always be canceled once test operation itself has been completed.

12. CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

- After completing work, be sure to measure and record trial run properties, and store measuring data,etc.

- Measuring items are room temperature,outside temperature,suction temperature,blow out temperature, wind velocity,wind volume, voltage,current,presence of abnormal vibration and noise,operating pressure,piping temperature, compressive pressure,airtight pressure.

- As to the structure and appearance,check following items.

Is circulation of air adequate ?

Is remote controller switch operated?

Is draining smooth?

Is there any faulty wiring ?

Is heat insulation complete (refrigerant and drain piping) ?

Are not terminal screws loosend? (N·cm[kgf·cm])

Is there any leakage of refrigerant ?

M4...157~196 {16~20}, M5...196~245 {20~25}

Is the address setting operated?

M6...245~294 {25~30}, M8...588~647 {60~66}

13. HAND OVER

- Teach the customer the operation and maintenance procedures,using the operation manual (air filter cleaning,temperature control,etc.).

As for work specifications of the outdoor unit, read the MANUAL FOR INSTALLATION WORK attached to the outdoor unit.

PACKAGED AIR CONDITIONERS

CASSETTE TYPE INSTALLATION MANUAL

UM SERIES

REFRIGERANT

R407C

Type	Model Name	Type	Model Name	Type	Model Name	Type	Model Name
36	CS-P36UM1HP	56	CS-P56UM1HP	80	CS-P80UM1HP	140	CS-P140UM1HP
45	CS-P45UM1HP	71	CS-P71UM1HP	112	CS-P112UM1HP		

Precautions in terms of safety

Carry out installation work with reliability after throughout reading of this 'Precautions in terms of safety'.

- Precautions shown here are differentiated between **Warnings** and **Cautions**, those that have much chance for leading to significant result such as fatality or serious injury if wrong installation should be carried out are listed compiling them especially into the column of **Warnings**.

However, even in the case of items which are listed in the column of **Cautions**, such items also a chance for leading to significant result depending on the situations.

In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration

▲ This mark means 'Caution' or 'Warning'.

● This mark means 'Compulsion'.

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of try run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
In addition, request the customer to keep this manual for installation work together with instruction manual and electric circuit diagram.

▲ Warnings

- The appliance must be installed by technician, who takes into account the requirements given in ISO5149 or eventual equivalent requirements.
- As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.
- Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.
- Electric work shall be carried out by the person qualified as an electric worker according to 'Technical standards regarding electric installation', and manual for installation work, and use exclusive circuit without fail. Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.
- Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.
- If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the even of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.
- Securely attach the protective covers for the outdoor unit connection cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.
- Every indoor and outdoor unit requires a separate power supply. Switch off all supplies before accessing any electrical part.

▲ Warnings

- If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.
- Once installation work is complete, check that there are no refrigerant gas into the room and comes into contact with sparks or flames from a fan heater, stove or kitchen range, it will cause toxic gases to be generated.
- When performing piping work do not mix air except for specified refrigerant(R407C) in refrigeration cycle, it causes capacity down, and risk of explosion and injury due to high tension inside refrigeration cycle.
- Any electrical work should only be carried out by a qualified technician.

▲ Cautions

- Carry out Earthing work.
Do not connect the Earth return to the gas pipe, water line pipe, lightning rod, Earth return of the telephone. Imperfection in Earth return may lead to electric shock.
- Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakages should arise and the gas builds up around the unit, such situation may lead to ignition.
- Mounting of the earth leakage breaker is required. Omission in mounting of the earth leakage breaker may lead to electric shock.
- Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.
- Position the indoor unit, outdoor units, power cords and indoor/outdoor unit connection cables so that they are at least 1 meter away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 meter.)



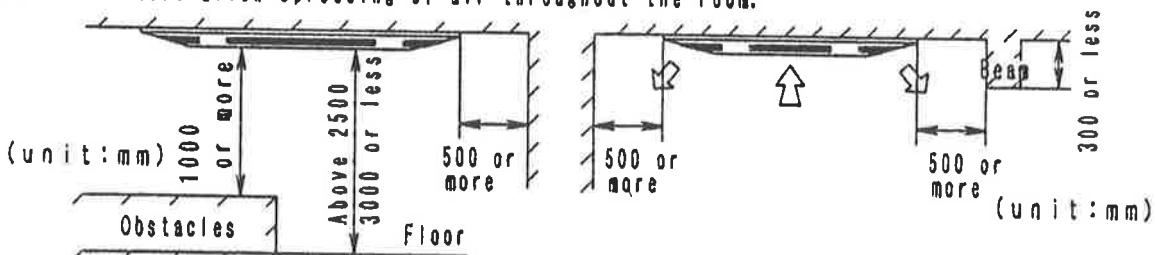
1. ACCESSORIES PACKED IN THE INDOOR UNIT CONTAINER

Name	Q'ty	Appearance	Purpose	Name	Q'ty	Appearance	Purpose
Drain hose with a clip	1		For drain piping	Flat washer for M10	8		For fixing the hanging bolts
Heat insulator	1		For insulating refrigerant pipe joint	Cable clamp	2		For fixing power cable
Band	2		For fastening the heat insulator	Set screw of paper template	4		Screw M5

2. SELECTING THE LOCATION OF THE INDOOR UNIT

Provide a check port on the piping side ceiling for repair and maintenance.

- Install the indoor unit the following conditions are satisfied, after receiving customer approval.
 1. The indoor unit must keep a maintenance space.
 2. The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spreading of air throughout the room.



*If the height from floor to ceiling exceeds three meters, air flow distribution deteriorates and the effect is decreased.

⚠ Warning

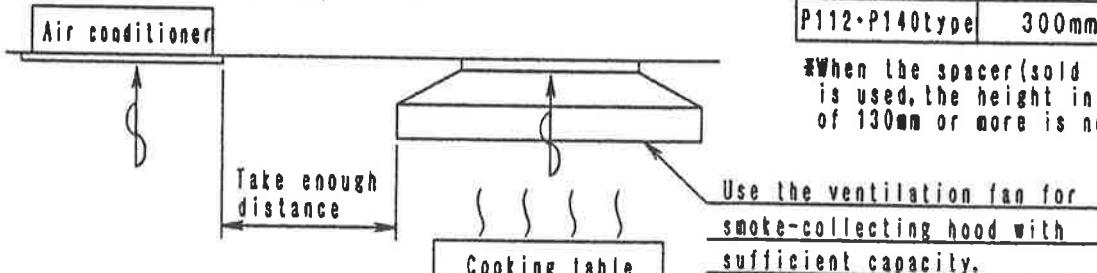
3. The installation position must be able to support a load four times the indoor unit weight.

4. The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
5. The indoor unit must allow easy draining.
6. The indoor unit must allow easy connection to the outdoor unit.
7. Place assuring the height in the ceiling shown in the below.
8. The indoor unit must be at least 3m away from any noise-generating equipment.
The electrical wiring must be shielded with a steel conduit.
9. If the power supply is subject to noise generation, add a suppressor.
10. Do not install the indoor unit in a laundry. Electric shocks may result

NOTE ● Thoroughly study the following installation locations:

1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the Turbo fan, the fin of the heatexchanger and the drain pump, resulting in heat exchange reduction, spraying, dispersing of water drops, drain pump malfunction, etc.
In these cases, take the following actions:

- Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
- Make enough distance from cooking room to install the air conditioner in such place where it may not suck in oily steam.



Model	Height in the ceiling
P36~P80type	250mm or more
P112~P140type	300mm or more

*When the spacer (sold separately) is used, the height in the ceiling of 130mm or more is needed further.

2. Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.
3. Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
4. Avoid places where sulfurous acid gas or corrosive gas is generated.
5. Avoid places near high frequency generators.

3. INSTALLATION OF INDOOR UNIT

This air conditioner uses a drain up motor.
Horizontally install the unit using a level gauge.

(Unit:mm)

CEILING OPENING DIMENSIONS AND HANGING BOLT LOCATION

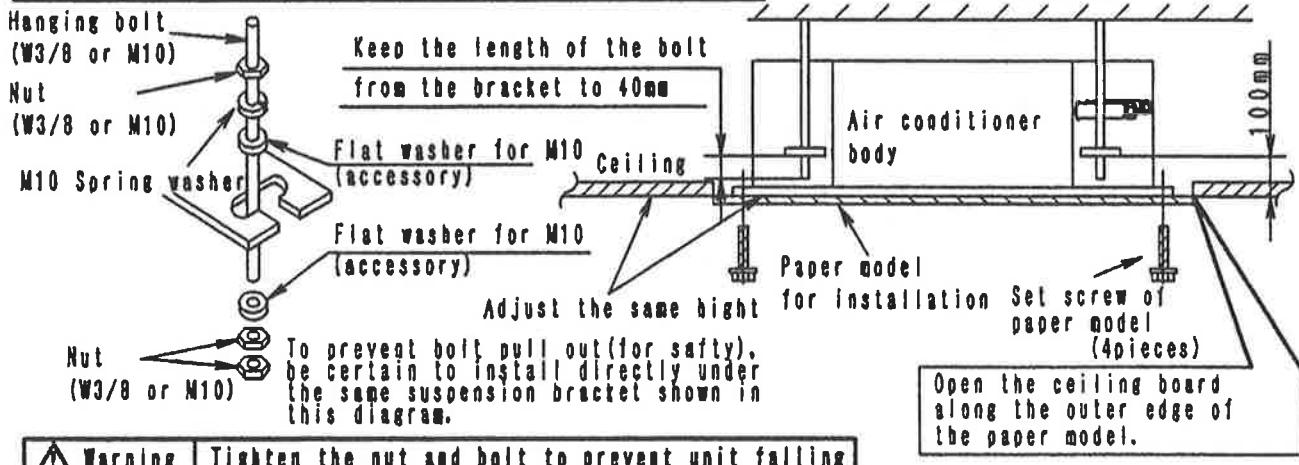
The paper model for installation is extended according to temperature and humidity.

Check on dimensions in using.

Caution During the installation, care must be taken not to damage electric wires.

- The dimensions of the paper model for installing are the same as those of the ceiling opening dimensions.
- Be sure to discuss the ceiling drilling work with the workers concerned.

POSITIONS OF AIR CONDITIONER BODY AND CEILING SURFACE



4. REFRIGERANT PIPING

Refrigerant piping is particularly important. Refrigeration cycle of the separate type air conditioners is accomplished by perfect work.

1. Brazing for piping

- a. Execute brazing before tightening the flare nut.
- b. Brazing must be executed while blowing nitrogen gas.
(This prevents generation of oxidized scale in copper pipe.)

2. Amount of refrigerant

Before shipped at the factory, the air conditioner (outdoor) is charged with refrigerant, the amount of which depends on the type of the air conditioner and is indicated on the name plate (outdoor).

3. Additional charging.

Caution As to refrigerant amount, see the manual for installation work of outdoor unit.

4. When there is a lot of brazings for long piping, install a strainer midway of the piping.
(The strainer is locally supplied.)

5. Use clean copper pipe with inner wall surface free from mist and dust.
Blow nitrogen gas or air to blow off dust in the pipe before connection.

6. Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times.
(This will result in hardening the pipe.)

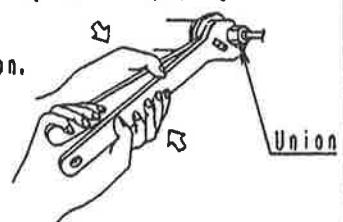
7. After deforming the piping, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.

8. Connect pipe to the service valve
which is located below the outdoor unit.

9. After completed the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.

Vacuum drying

After completing the piping connection, execute vacuum drying for the connecting piping and the indoor unit. The Vacuum drying must be carried out using the service ports of both the liquid and gas side valves.



CAUTION

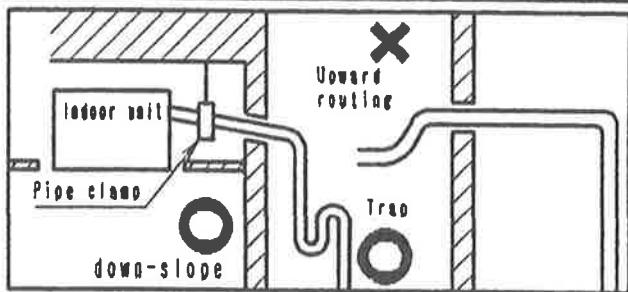
Use two wrenches and tighten with regular torque.

Flare nut fastening torque N·cm(kgf·cm)		
Φ9.52mm	42 (430)	Φ15.88mm
Φ12.7mm	55 (560)	Φ19.05mm

Model	Liquid side piping	Gas side piping
P36-P45type	Φ9.52mm	Φ12.7 mm
P56-P71-P80type	Φ9.52mm	Φ15.88mm
P112-P140type	Φ9.52mm	Φ19.05mm

5. INDOOR UNIT DRAIN PIPING

- Drain piping must have down-slope (1/50 to 1/100); be sure not to provide up-and-down slope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port at indoor unit.
- The outside diameter of the drain connection at the indoor unit is 32mm.



Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings

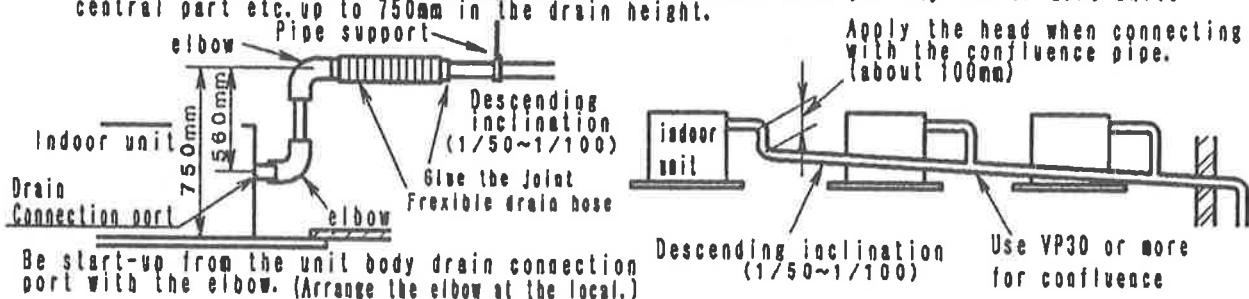
- Be sure to execute heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 8 mm

Please install the trap.

Because the stink invades when the drain piping is drained directly to drainage.

- It is possible when a lot of its inclination are necessary in the installation of a floor central part etc. up to 750mm in the drain height.
- Place and put the head as shown in the figure below when you lay two or more units



Be start-up from the unit body drain connection port with the elbow. (Arrange the elbow at the local.)

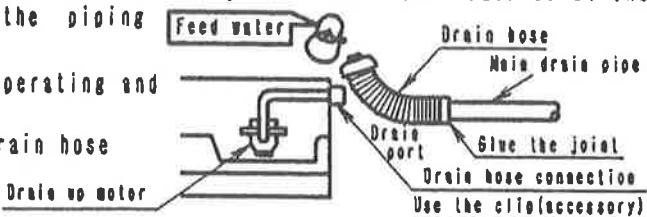
Descending inclination (1/50~1/100)

Use VP30 or more for confluence

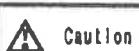
Drain test

The air conditioner uses a drain up motor to drain water.

- Use the following procedure to test the drain up motor operation.
- Connect the main drain pipe to exterior and leave it provisionally until the test comes to an end.
- Feed water to the flexible drain hose and check the piping for leakage.
- Be sure to check the drain up motor for normal operating and noise when electric wiring is complete.
- When the test is complete, connect the flexible drain hose to the drain port



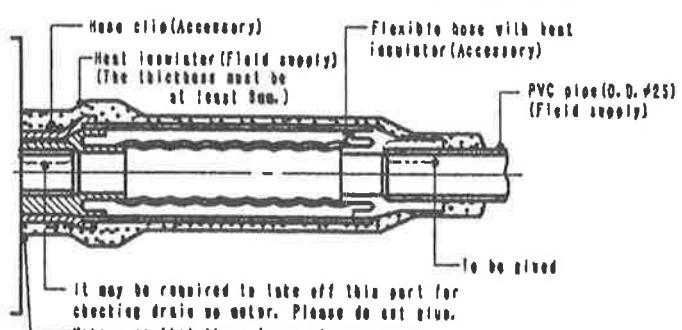
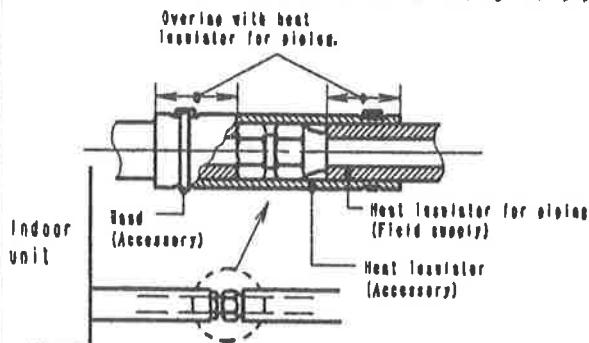
6. HEAT INSULATION



Caution

Be sure to execute heat insulation on the drain and gas piping. Imperfection in heat insulation work leads to water leakage.

1. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance. (over 120 degree C).



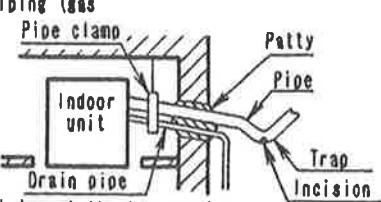
2. Precautions in high humidity circumstance.

This air conditioner has been tested according to the "JIS Standard Conditions with Mist" and confirmed that there is not any fault. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23 degree C), water drops are liable to fall. In this case add heat insulation material according to the following procedure:

- Heat insulation material to be prepared... Adiabatic glass wool with thickness 10 to 20 mm
- Stick glass wool on all air conditioners that are located in ceiling atmosphere.
- In addition to the normal heat insulation (thickness: more than 8 mm) for refrigerant piping (gas piping: thick piping) and drain piping, add further 10 mm to 30 mm thickness material.

Wall seal

- When the outdoor unit is installed on a higher position than the indoor unit, install the trap to not instill rain water into the wall by transmitting in piping.
- Stuff the space among piping, the electric wire, and the drain hose with 'Patty' and seal the penetration wall hole.
- make sure that rain water not instill into the wall.



*Put the Incision at the trap part of the heat insulator. (for water drain)

7. ELECTRICAL WIRING

As to main power source and cable size of outdoor unit, read the installation manual attached to the outdoor unit.

⚠ Warning

The unit must be installed in accordance with applicable national and local regulations. The unit installed by a professional installer must be supplied from a dedicated electrical circuit. All electric work must be carried out by a qualified technician according to proper technical standards for electrical work and according to installation manual for installation work. If circuits with insufficient capacity are used, or if electrical work is not carried out properly, electric shocks or fire may result.

⚠ Caution

Be sure to install a leakage current breaker or circuit breaker to the main power supply. otherwise electric shocks may result.

⚠ Caution

Be sure to connect the unit to secure earth connection. (with a earth resistance of 100Ω or less) If the earthing work is not carried out properly, electric shocks may result. 

⚠ Caution

Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

1. Select a power source that is capable of supplying the current required by the air conditioner.
2. Feed the power source to the unit via a distribution switch board designed for this purpose. the switch should disconnected all poles with a contact separation of at least 3 mm.
3. The terminal screws inside the control box may be loose due to vibration during transport. Check the screws for loose connection. (Running the air conditioner with loose connection can overload and damage electrical components.)
4. Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
5. Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires. (The earth line is also similar)
6. If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off again until at least 1 minute has passed.
7. Be sure to turn off the main power before installing and connecting the remote controller.
8. Do not operate remote controller within 1 minute after turning the power of indoor unit on.

CABLE SPECIFICATION

Bus line(control signal cable)
to the outdoor unit
or the other indoor unit

*Power supply cable specification(indoor unit)

Use a standard power cord for Europe.
(such as H05RN-F or H07RN-F which conforms to CENELEC(HAR) rating specifications.)
Minimum wire size 2.5mm².

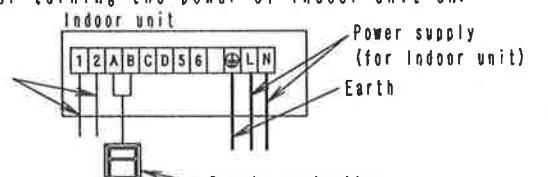
*Control signal cable specification(1 pair(2 wires) no shield)

Use a instrumentation cable 0.75mm²~1.0mm²
•Resistance:within 27Ω/km •Static capacity:within 60nF/km
The use of cable with shield is a strict prohibition.

*Remote controller cable specification

Use sheathed vinyl cord or cable with area 0.5mm² to 2mm²
•The remote controller cord can be up to 500m long.

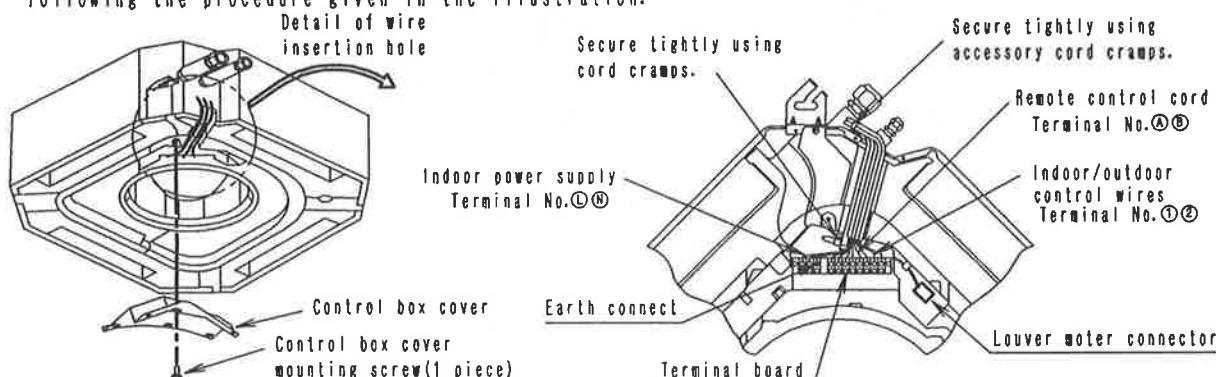
For details the cable connection, please refer to the outdoor unit installation manual.



} Use a standard cord
for Europe which
conforms to CENELEC(HAR)
rating specifications.

CONNECTING THE WIRES TO THE CONTROL BOX

- Remove a one mounting screw, remove the control box cover, and then connect the wires by following the procedure given in the illustration.



Caution Make sure that screws of the terminal are free from looseness.

Caution When the supply cord is damaged it must be replaced by the manufacturer or its service agent.

8. SETTING ADDRESS OF UNIT

It is necessary to set addresses for the indoor units, the outdoor units, and the remote controllers.

If these settings are not done, the equipment will not operate correctly.

Refer to 「ADDRESS SETTING MANUAL」 affixed to the outdoor unit and 「INSTALLATION MANUAL」 affixed to the remote control for the address setting.

9. INSTALLATION OF DECORATIVE PANEL

The decorative panel has its installation direction.

Before installing the decorative panel, always remove the paper template.

1. Temporarily fix two decorative panel fixing screws(hexagon M5 screw) on the unit body.
(Tighten by about 10 mm in length.)

2. Remove the air inlet grill from the decorative panel.
(Remove the hook for the air inlet grill cord.)

3. Hook the decorative panel key hole (key hole) on the screws fixed in step above, and slide the panel so that the screws reach the key hole edge.

4. Relighten completely two temporarily fixed screws and other two screws.
(total 4 screws)

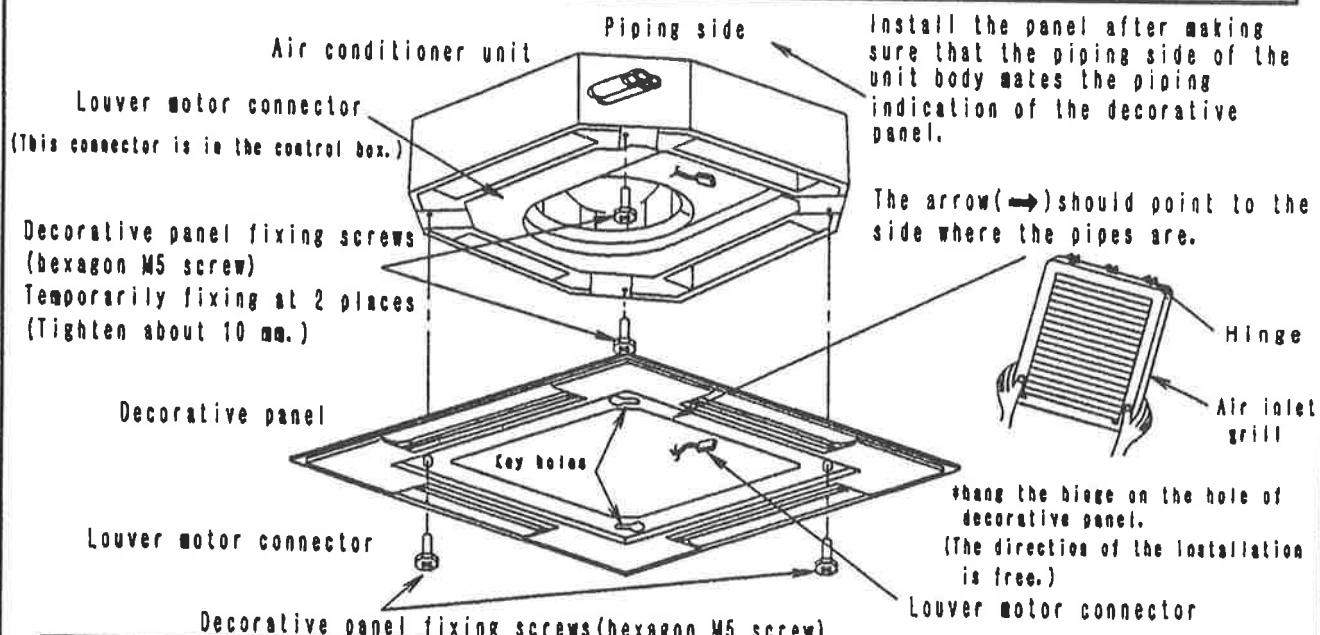
5. Connect the louver motor connector.



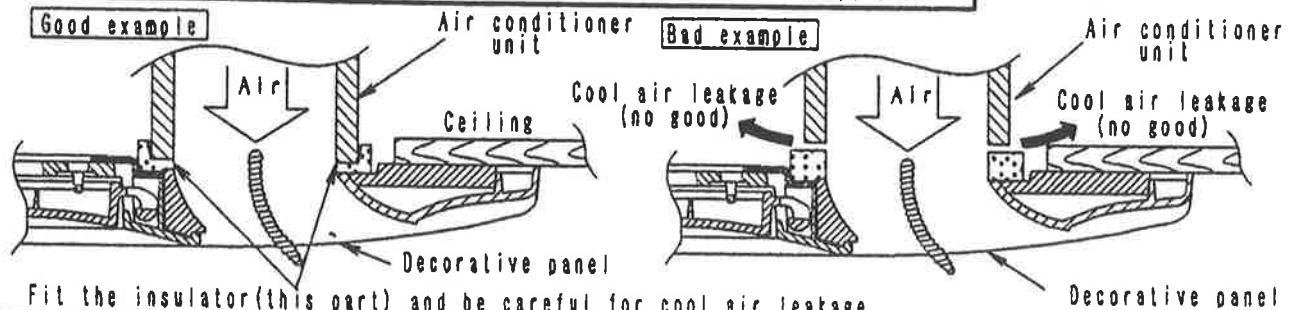
Caution Be sure to connect louver motor connector. imperfect connection leads to fire, electric shock, etc.

6. After tightening these screws, install the air inlet grill(including the air filter).

Warning Be sure to hook the air inlet grill strings, to prevent grill falling and injury from it.



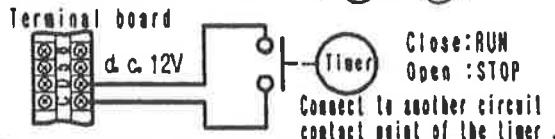
Caution Install certainly the decorative panel.
Cool air leakage causes sweating. ⇒ Water drops fall.



Fit the insulator(this part) and be careful for cool air leakage.

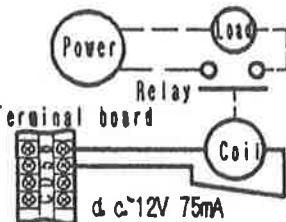
10. AS FOR TIMER AND FAN OUTPUT

Timer setting For use of a timer (locally supplied) connect the contactor of the timer to terminals **C** and **D**.



Fan output

Connect the contactor of the relay (locally supplied) to terminals **5** and **6**.



11. PRECAUTIONS IN TEST RUN

- The initial power supply must provide at least 90% of the rated voltage. Otherwise, the air conditioner should not be operated.
- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit , refer to "TEST OPERATION" in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation , follow the procedure given below.



- First, press the run(**①**) button.
- Then press the TEST RUN button within 1 minute of pressing the run(**①**) button.
- Next , select the operation modes .
- The temperature of the indoor unit pipes will be shown on the temperature setting display . (At the start of test operation , it may take up to 1 minute for airconditioner number , switching time and other displays to appear.)
- After operation modes have been selected , momentarily stop the compressor.
- Press the run(**①**) button or the TEST RUN button once more to cancel test operation mode.

NOTE1

Do not short the remote control unit wires to each other . (The protection circuit will be activated and the units will not operate .) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE2

When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. if heating mode is selected first, it may cause problems with operation of the compressor. (Heat pump model only)

NOTE3

Test operation should be carried out for a minimum of 5 minutes . (Test operation will be canceled automatically after 30 minutes .)

NOTE4

Test operation mode should always be canceled once test operation itself has been completed.

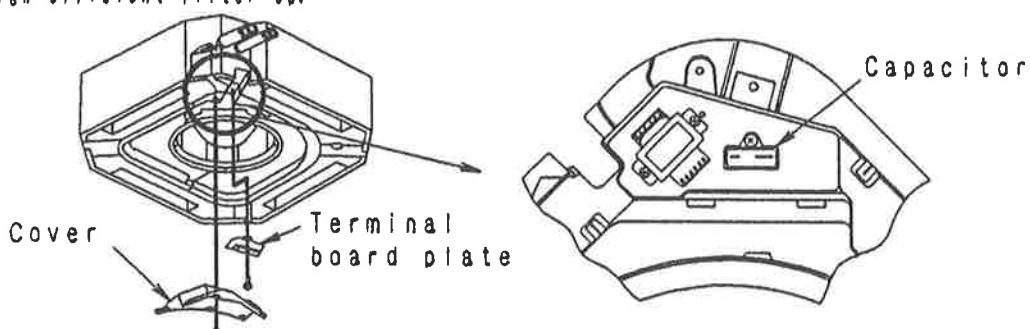
12. WHEN YOU BUILD IN THE MIDDLE OR HIGH EFFICIENT FILTER

When you build in the middle or high efficient filter ,rise the static pressure for the fan.

Change the running capacitor for the fan in the control box and raise the static pressure of the fan.

03-5% of the amount of the wind decreases for the air resistance of the filter even if the static pressure rise of the fan is done.

Moreover it rises by about 2-4dB even if adhering to the noise,so be careful when you sets the middle or high efficient filter up.



Choose and arrange the capacitor from the left table.

Model	Capacitor	Parts No.
P 36	400V 1.3μF	CNR 06-844600
P 45	400V 1.3μF	CNR 06-844600
P 56	400V 1.5μF	CNR 06-835450
P 71	460V 1.8μF	CNR 06-835340
P 80	460V 2.0μF	CNR 06-832990
P 112	400V 4.0μF	CNR 06-834110
P 140	460V 3.5μF	CNR 06-837170

13. CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

- After completing work, be sure to measure and record trial run properties, and store measuring data, etc.
- Measuring items are room temperature, outside temperature, suction temperature, blow out temperature, wind velocity, wind volume, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperature, compressive pressure, airtight pressure.
- As to the structure and appearance, check following items.
 - Is circulation of air adequate?
 - Is remote controller switch operated?
 - Is draining smooth?
 - Is there any faulty wiring?
 - Is heat insulation complete (refrigerant and drain piping)?
 - Are not terminal screws loosend? (N·cm(kgf·cm))
M4...157~196 (16~20), M5...196~245 (20~25)
M6...245~294 (25~30), M8...588~647 (60~66)
 - Is there any leakage of refrigerant?
 - Is the address setting operated?

14. HAND OVER

- Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.).

As for work specifications of the outdoor unit, read the
MANUAL FOR INSTALLATION WORK attached to the outdoor unit.

PACKAGED AIR CONDITIONERS

HIDE-AWAY TYPE INSTALLATION MANUAL

EM SERIES

REFRIGERANT
R407C

Type	Model Name	Type	Model Name	Type	Model Name
45	CS-P45EM1HP	71	CS-P71EM1HP	112	CS-P112EM1HP
50	CS-P50EM1HP	80	CS-P80EM1HP	140	CS-P140EM1HP

Precautions in terms of safety.

Carry out installation work with reliability after throughout reading of this 'Precautions in terms of safety'.

- Precautions shown here are differentiated between **Warnings** and **Cautions**, those that have much chance for leading to significant result such as fatality or serious injury if wrong installation should be carried out are listed combining them especially into the column of **Warnings**.

However, even in the case of items which are listed in the column of **Cautions**, such items also a chance for leading to significant result depending on the situations.

- In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration

This mark means 'Caution' or 'Warning'.

This mark means 'Compulsion'.

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of try run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
In addition, request the customer to keep this manual for installation work together with instruction manual and electric circuit diagram.

Warnings

- The appliance must be installed by technician, who takes into account the requirements given in ISO5149 or eventual equivalent requirements.
- As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.
- Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.
- Electric work shall be carried out by the person qualified as an electric worker according to Technical standards regarding electric installation, and manual for installation work, and use exclusive circuit without fail. Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.
- Piping shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.
- If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the event of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.
- Securely attach the protective covers for the outdoor unit connection cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.
- Every indoor and outdoor unit requires a separate power supply. Switch off all supplies before accessing any electrical part.

Warnings

- If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.
- Once installation work is complete, check that there are no refrigerant gas into the room and comes into contact with sparks or flames from a gas heater, stove or kitchen range, it will cause toxic gases to be generated.
- When performing piping work do not mix air except for specified refrigerant (R407C) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside refrigeration cycle.
- Any electrical work should only be carried out by a qualified technician.

Cautions

- Carry out Earthing work. Do not connect the Earth return to the gas pipe, water line pipe, lightning rod, Earth return of the telephone. Imperfection in Earth return may lead to electric shock.
- Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakages should arise and the gas builds up around the unit, such situation may lead to ignition.
- Mounting of the earth leakage breaker is required. Omission in mounting of the earth leakage breaker may lead to electric shock.
- Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.
- Position the indoor unit, outdoor units, power cords and indoor/outdoor unit connection cables so that they are at least 1 meter away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 meter.)

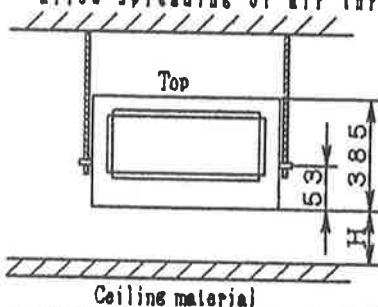


1. ACCESSORIES PACKED IN THE INDOOR UNIT CONTAINER

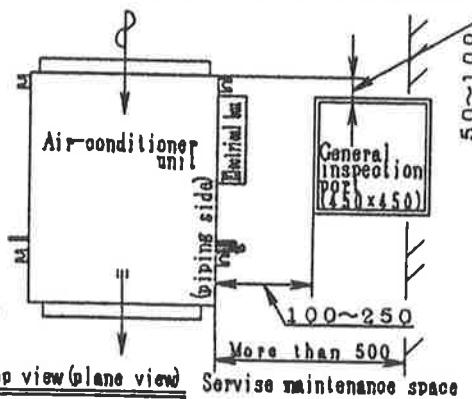
Name	Q'ty	Appearance	Purpose	Name	Q'ty	Appearance	Purpose
Drain hose with a clip	1		For drain piping	Flat washer for M10	8		For fixing the hanging bolts
Heat insulator	1		For insulating refrigerant pipe joint	Cable clamp	2		For fixing power cable
Band	2		For fastening the heat insulator				

2. SELECTING THE LOCATION OF THE INDOOR UNIT

- Provide a check port on the piping side ceiling for repair and maintenance.
- Install the indoor unit the following conditions are satisfied, after receiving customer approval.
 - The indoor unit must keep a maintenance space.
 - The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spreading of air throughout the room.



The 'H' dimension in the diagram above is the height so that there is enough incline for the drain piping when using natural drainage.



Top view (plane view) Service maintenance space

Warning

- The installation position must be able to support a load four times the indoor unit weight.

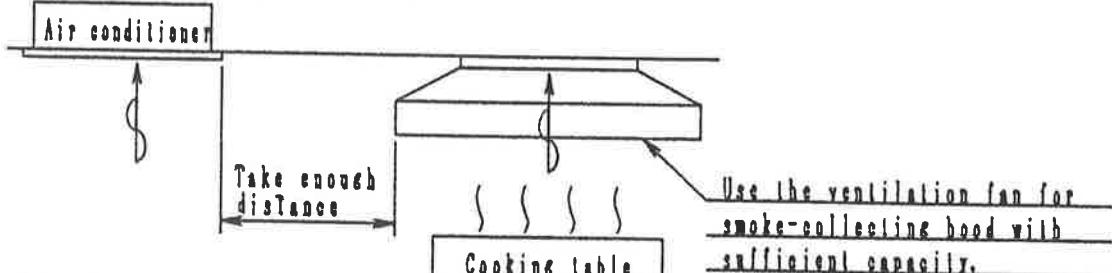
- The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
- The indoor unit must allow easy draining.
- The indoor unit must allow easy connection to the outdoor unit.
- Place assuring the height in the ceiling shown in the below.
- The indoor unit must be at least 3m away from any noise-generating equipment.
- The electrical wiring must be shielded with a steel conduit.
- If the power supply is subject to noise generation, add a suppressor.
- Do not install the indoor unit in a laundry. Electric shocks may result!

NOTE

● Thoroughly study the following installation locations:

- In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the turbo fan, the fin of the heatexchanger and the drain pump, resulting in heat exchange reduction, spraying, dispersing of water drops, drain pump malfunction, etc. In these cases, take the following actions:

- Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
- Take enough distance from cooking room to install the air conditioner in such place where it may not suck in oily steam.



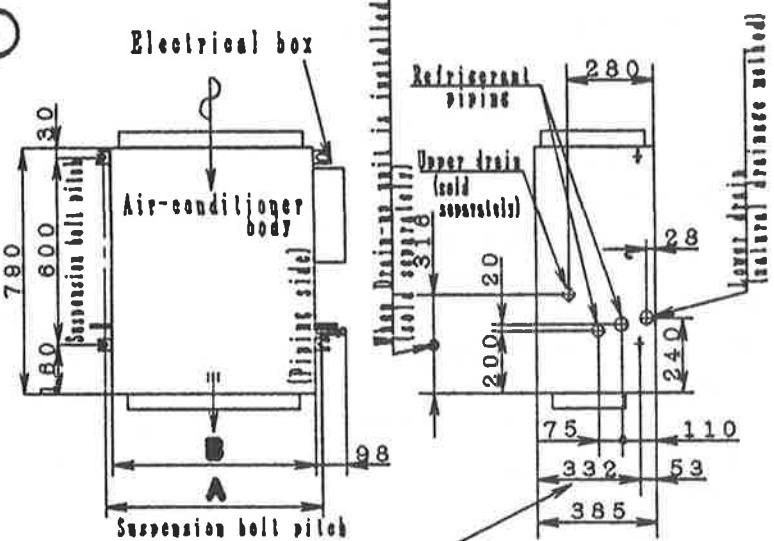
- Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.
- Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
- Avoid places where sulfurous acid gas or corrosive gas is generated.
- Avoid places near high frequency generators.

3. INSTALLATION OF INDOOR UNIT

POSITION OF SUSPENSION BOLT

1. Give consideration to wiring, piping and servicing when determining the initial top position of unit. Install the suspension bolts.
2. After deciding on the installation position of the unit, install the suspension bolts.

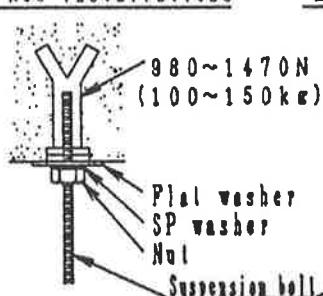
MODEL	A (Unit:mm)	B (Unit:mm)
P45 type	895	850
P58-P71-P80 type	895	850
P112-P140 type	1395	1350



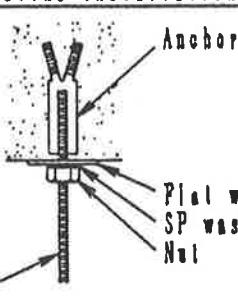
SUSPENSION BOLTS, AND FASTENING THE UNIT INTO POSITION

Concrete

New installations

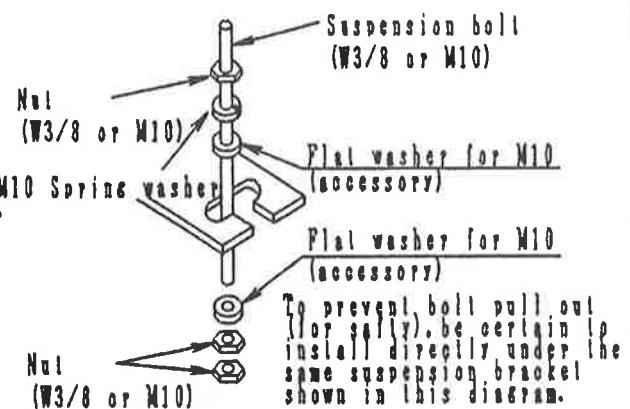


Existing installations



Warning Tighten the nut and bolt to prevent unit falling

Suspension bolt details



4. REFRIGERANT PIPING

Refrigerant piping is particularly important. Refrigeration cycle of the separate type air conditioners is accomplished by perfect work.

1. Brazing for piping

- a. Execute brazing before tightening the flare nut.
- b. Brazing must be executed while blowing nitrogen gas.
(This prevents generation of oxidized scale in copper pipe.)

2. Amount of refrigerant

Before shipped at the factory, the air conditioner (outdoor) is charged with refrigerant, the amount of which depends on the type of the air conditioner and is indicated on the name plate (outdoor).

3. Additional charging.

Caution As to refrigerant amount, see the manual for installation work of outdoor unit.

4. When there is a lot of brazings for long piping, install a strainer midway of the piping.
(The strainer is locally supplied.)

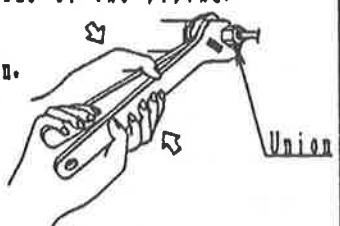
5. Use clean copper pipe with inner wall surface free from mist and dust.
Blow nitrogen gas or air to blow off dust in the pipe before connection.

6. Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times.
(This will result in hardening the pipe.)

7. After deforming the piping, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.

8. Connect pipe to the service valve which is located below the outdoor unit.

9. After completed the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.



CAUTION

Use two wrenches and tighten with regular torque.

Flare nut fastening torque N·m(kg·cm)			
Φ8.52mm	42 (430)	Φ15.88mm	85 (660)
Φ12.7mm	55 (550)	Φ19.05mm	100 (1020)

Model	Liquid side piping	Gas side piping
P45 type	Φ9.52mm	Φ12.7 mm
P58-P71-P80 type	Φ9.52mm	Φ15.88mm
P112-P140 type	Φ9.52mm	Φ19.05mm

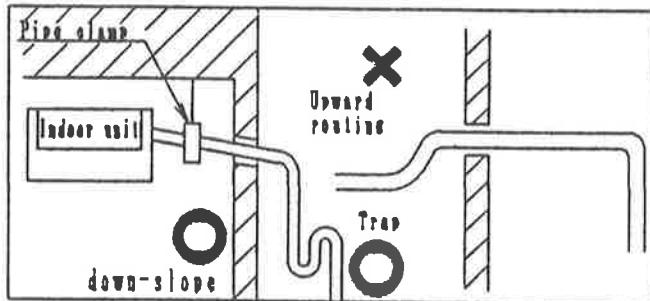
Vacuum drying

After completing the piping connection, execute vacuum drying for the connecting piping and the indoor unit. The Vacuum drying must be carried out using the service ports of both the liquid and gas side valves.

5. INDOOR UNIT DRAIN PIPING

- Drain piping must have down-slope up-and-downslope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port at indoor unit.
- The outside diameter of the drain connection at the indoor unit is 32mm.

Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings



- Be sure to execute heat insulation on the drain piping.

Heat insulation material:

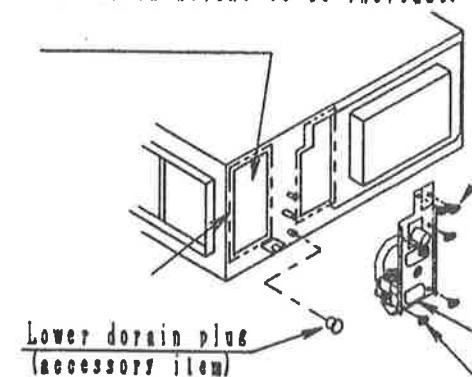
Polyethylene foam with thickness more than 8 mm

Please install the trap.
Because the stink invades when the drain piping is drained directly to drainage.

- Place and put the head as shown in the right figure when you lay two or more units

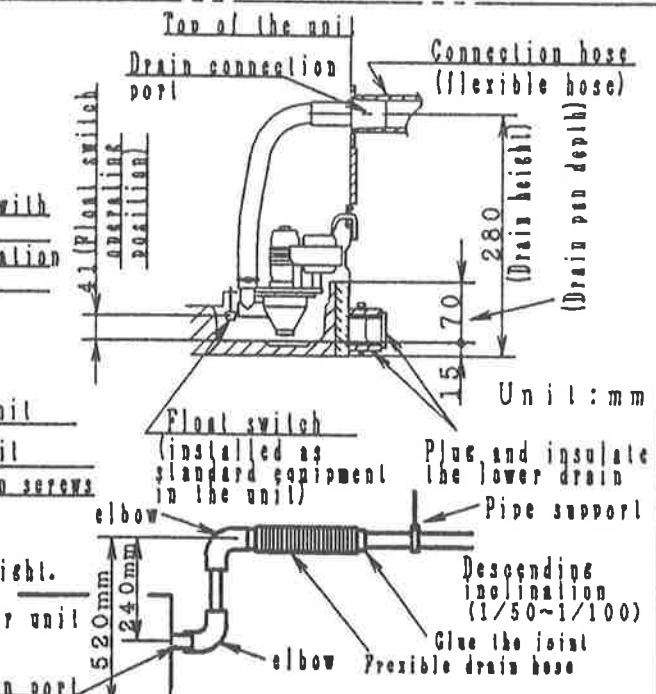
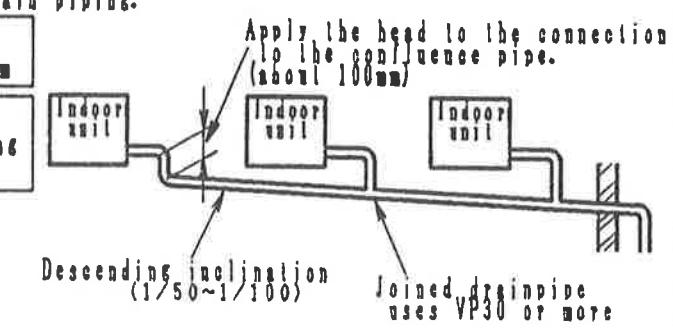
- Assembly of the Drain-up unit (CZ-08DMEV4F) (sold separately)

When natural water drainage will not work with the drain height, installation of this unit allows the drain height to be increased.



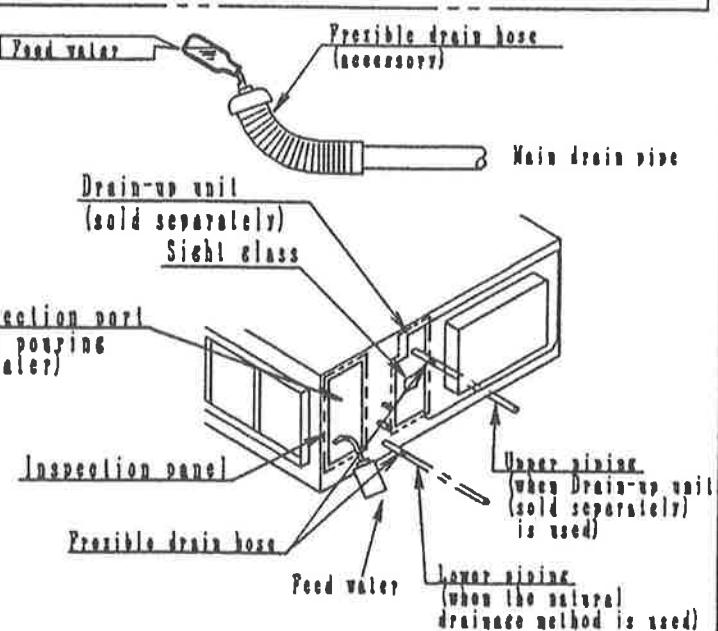
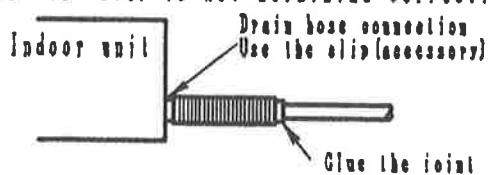
- It is possible when a lot of its inclination are necessary in the installation of a floor central part etc. up to 520mm in the drain height.

Be start-up from the unit body again connection port with the elbow.
(Arrange the elbow at the local.)



Drain test

- Leave the main drain pipe temporarily connected for the duration of water discharge test.
- Remove the inspection panel, and pour in 20 to 30 liters of water via inspection port.
- Ensure that the flexible hose stays connected to drain connection port after the water discharge test complete.
- Then using the Drain-up unit (sold separately), operate the unit and visually observe the pumping from the sight glass to confirm that the water is being discharged.
- A float switch to prevent overflow is installed in the unit as standard equipment. It will not operate correctly if the water is not draining correctly.



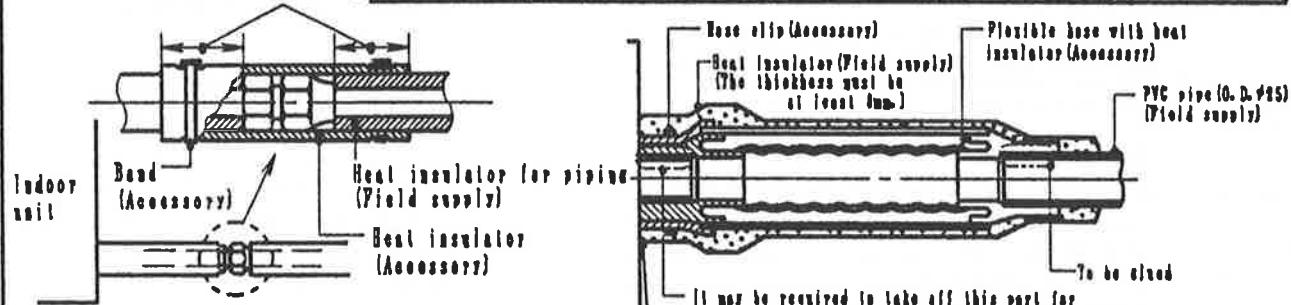
8. HEAT INSULATION

1. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance. (over 120 degree C).

Overlap with heat insulator for piping.



Be sure to execute heat insulation on the drain and gas piping. Imperfection in heat insulation work leads to water leakage.



2. Precautions in high humidity circumstance.

This air conditioner has been tested according to the "JIS Standard Conditions with Mist" and confirmed that there is not any fault. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23 degree C), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:

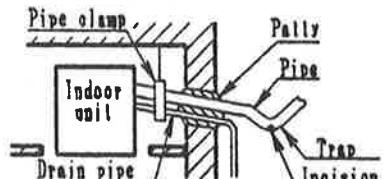
- Heat insulation material to be prepared....Adiabatic glass wool with thickness 10 to 20 mm.
- Stick glass wool on all air conditioners that are located in ceiling atmosphere.
- In addition to the normal heat insulation (thickness:more than 8 mm) for refrigerant piping (gas piping: thick piping) and drain piping, add further 10 mm to 30 mm thickness material.

Wall seal

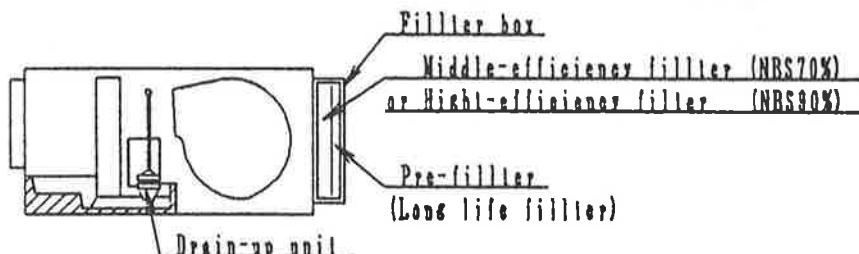
When the outdoor unit is installed on a higher position than the indoor unit, install the trap to not instill rain water into the wall by transmitting in piping.

Stuff the space among piping, the electric wire, and the drain hose with 'Patty' and seal the penetration wall hole.

make sure that rain water not instill into the wall.



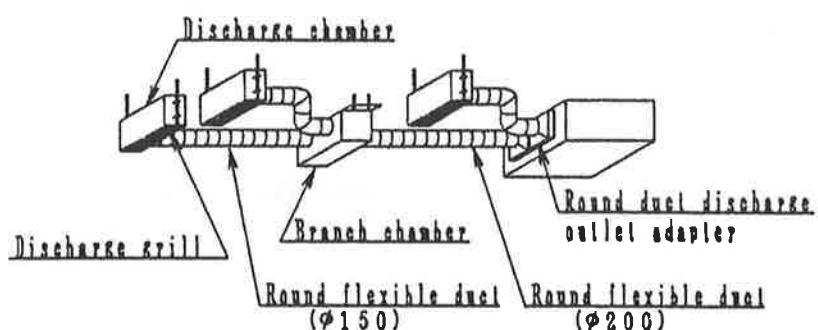
Installation layout for separately-purchased parts



Discharge side materials

Flexible round-duct type

Easy-installation work materials can also be installed.



7. ELECTRICAL WIRING

As to main power source and cable size of outdoor unit, read the installation manual attached to the outdoor unit.

⚠ Warning

The unit must be installed in accordance with applicable national and local regulations. The unit installed by a professional installer must be supplied from a dedicated electrical circuit. All electric work must be carried out by a qualified technician according to proper technical standards for electrical work and according to installation manual for installation work. If circuits with insufficient capacity are used, or if electrical work is not carried out properly, electric shocks or fire may result.

⚠ Caution

Be sure to install a leakage current breaker or circuit breaker to the main power supply. otherwise electric shocks may result.

⚠ Caution

Be sure to connect the unit to secure earth connection. (with a earth resistance of 100Ω or less) If the earthing work is not carried out properly, electric shocks may result.

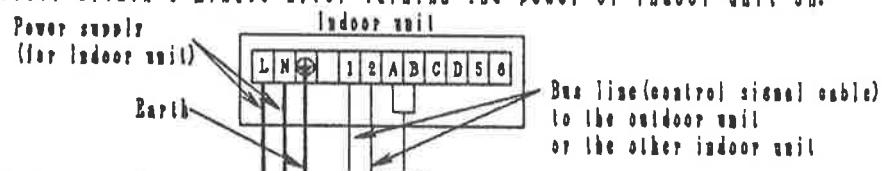


⚠ Caution

Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

1. Select a power source that is capable of supplying the current required by the air conditioner.
2. Feed the power source to the unit via a distribution switch board designed for this purpose. the switch should disconnected all poles with a contact separation of at least 3 mm.
3. The terminal screws inside the control box may be loose due to vibration during transport. Check the screws for loose connection. (Running the air conditioner with loose connection can overload and damage electrical components.)
4. Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
5. Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires. (The earth line is also similar)
6. If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off again until at least 1 minute has passed.
7. Be sure to turn off the main power before installing and connecting the remote controller.
8. Do not operate remote controller within 1 minute after turning the power of indoor unit on.

CABLE SPECIFICATION



*Power supply cable specification(indoor unit)

Use a standard power cord for Europe.
(such as R05RA-P or R07RA-P which conforms to CENELEC(HAR) rating specifications.)
Minimum wire size 2.5mm².

*Control signal cable specification(1 pair(2 wires) no shield)

Use a instrumentation cable 0.75mm²~1.0mm²
•Resistance:within 27Ω/km •Static capacity:within 80nF/km
The use of cable with shield is a strict prohibition.

*Remote controller cable specification

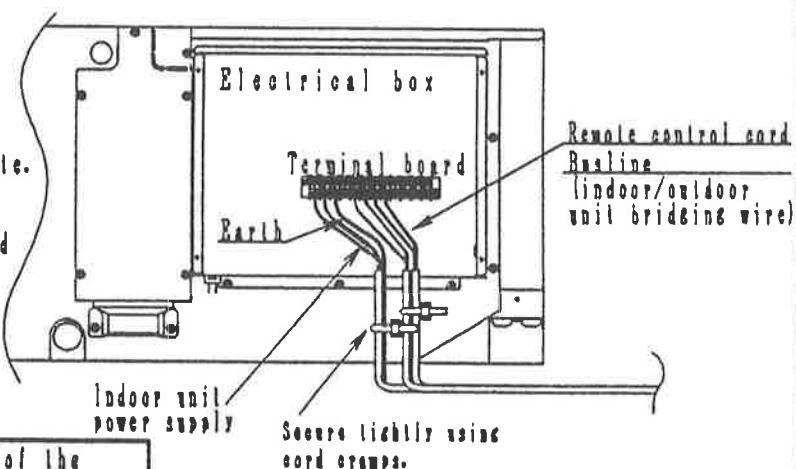
Use sheathed vinyl cord or cable with area 0.5mm² to 2mm²
•The remote controller cord can be up to 500m long.

} Use a standard cord for Europe which conforms to CENELEC(HAR) rating specifications.

For details the cable connection, please refer to the outdoor unit installation manual.

CONNECTING THE WIRES TO THE CONTROL BOX

- Remove four mounting screw, remove the control box cover, and then connect the wires by following the procedure given in the illustration.
- Keep the wiring, refrigerant pipe and drain piping physically separate.
- To prevent erroneous operation due to electrical noise, the power and signal wiring must be separated by at least 300mm (including power supply wiring for other electrical devices such as TVs etc.)



-Caution

Make sure that screws of the terminal are free from looseness.

8. SETTING ADDRESS OF UNIT

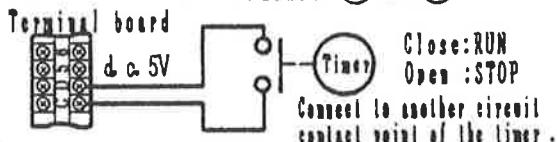
It is necessary to set addresses for the indoor units, the outdoor units, and the remote controllers.

If these settings are not done, the equipment will not operate correctly.

Refer to [ADDRESS SETTING MANUAL] affixed to the outdoor unit
and [INSTALLATION MANUAL] affixed to the remote control for the address setting.

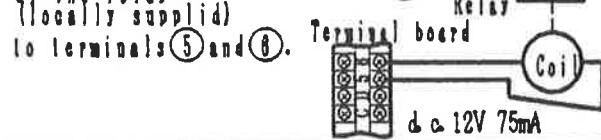
10. AS FOR TIMER AND FAN OUTPUT

Timer setting For use of a timer (locally supplied), connect the contactor of the timer to terminals C and D.



Fan output

Connect the contactor of the relay (locally supplied) to terminals 5 and 6.



11. PRECAUTIONS IN TEST RUN

- The initial power supply must provide at least 90% of the rated voltage. Otherwise, the air conditioner should not be operated.

- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to "TEST OPERATION" in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation, follow the procedure given below.



- First, press the run(①) button.
- Then press the TEST RUN button within 1 minute of pressing the run(①) button.
- Next, select the operation modes.
- The temperature of the indoor unit pipes will be shown on the temperature setting display. (At the start of test operation, it may take up to 1 minute for airconditioner number, switching time and other displays to appear.)
- After operation modes have been selected, momentarily stop the compressor.
- Press the run(①) button or the TEST RUN button once more to cancel test operation mode.

NOTE1

Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE2

When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. If heating mode is selected first, it may cause problems with operation of the compressor. (Heat pump model only)

NOTE3

Test operation should be carried out for a minimum of 5 minutes. (Test operation will be canceled automatically after 30 minutes.)

NOTE4

Test operation mode should always be canceled once test operation itself has been completed.

12. CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

After completing work, be sure to measure and record trial run properties, and store measuring data, etc.

Measuring items are room temperature, outside temperature, suction temperature, blow out temperature, wind velocity, wind volume, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperature, compressive pressure, airtight pressure.

As to the structure and appearance, check following items.

- | | |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <input type="checkbox"/> Is circulation of air adequate? | <input type="checkbox"/> Is remote controller switch operated? |
| <input type="checkbox"/> Is draining smooth? | <input type="checkbox"/> Is there any faulty wiring? |
| <input type="checkbox"/> Is heat insulation complete (refrigerant and drain pipe)? | <input type="checkbox"/> Are not terminal screws loosened? (N·cm(kgf·cm)) |
| <input type="checkbox"/> Is there any leakage of refrigerant? | M4...157~198(16~20), M5...198~245(20~25) |
| <input type="checkbox"/> Is the address setting operated? | M6...245~294(25~30), M8...588~847(80~88) |

13. HAND OVER

• Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.).

As for work specifications of the outdoor unit, read the
MANUAL FOR INSTALLATION WORK attached to the outdoor unit.

PACKAGED AIR CONDITIONERS

WALL TYPE INSTALLATION MANUAL

KM SERIES

REFRIGERANT
R407C

Type	Model Name	Type	Model Name	Type	Model Name
22	CS-P22KM1HP	45	CS-P45KM1HP	71	CS-P71KM1HP
36	CS-P36KM1HP	58	CS-P58KM1HP		

Precautions in terms of safety

Carry out installation work with reliability after throughout reading of this 'Precautions in terms of safety'.

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- As to indications with illustration

▲ This mark means 'Caption' or 'Warning'.

● This mark means 'Compulsion'.

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of try run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual. In addition, request the customer to keep this manual for installation work together with instruction manual and electric circuit diagram.



Warnings

- The appliance must be installed by technician, who takes into account the requirements given in ISO5149 or eventual equivalent requirements.
- As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.
- Carry out the installation work with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.
- Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.
- Electric work shall be carried out by the person qualified as an electric worker according to 'Technical standards regarding electric installation', and manual for installation work, and use exclusive circuit without fail. Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.
- Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.
- If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the even of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.
- Securely attach the protective covers for the outdoor unit connecting cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.
- Every indoor and outdoor unit requires a separate power supply. Switch off all supplies before accessing any electrical part.



Warnings

- If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.
- Once installation work is complete, check that there are no refrigerant gas into the room and comes into contact with sparks or flames from a fan heater, stove or kitchen range, it will cause toxic gases to be generated.
- When performing piping work do not mix air except for specified refrigerant(R407C) in refrigeration cycle, it causes capacity down, and risk of explosion and injury due to high tension inside refrigeration cycle.
- Any electrical work should only be carried out by a qualified technician.

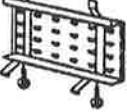


Cautions

- Carry out Earthing work.
Do not connect the Earth return to the gas pipe, water line pipe, lightning rod, Earth return of the telephone. Imperfection in Earth return may lead to electric shock.
- Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakages should arise and the gas builds up around the unit, such situation may lead to ignition.
- Mounting of the earth leakage breaker is required. Omission in mounting of the earth leakage breaker may lead to electric shock.
- Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc, to become wet.
- Position the indoor unit, outdoor units, power cords and indoor/outdoor unit connection cables so that they are at least 1 meter away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 meter.)



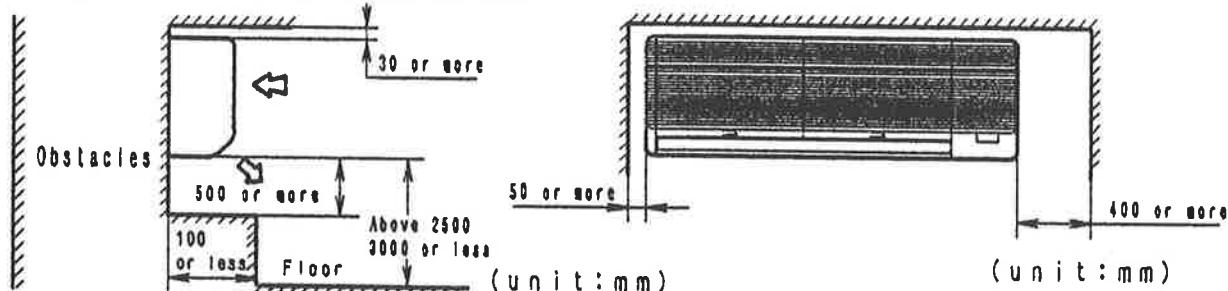
1. ACCESSORIES PACKED IN THE INDOOR UNIT CONTAINER

Name	Q'ty	Appearance	Purpose	Name	Q'ty	Appearance	Purpose
Hanger plate	1			Piping restraint	2		For restraining the piping
Hanger bracket	2		For installing the indoor unit	#5.8 wood screw	8		For securing installation bracket to the wall (#5.8x32)
M5 hex screw	2			Tapping screw	2		For securing the indoor unit (#4x12L)
Insulating tube	1		Insulation for the refrigerant pipe connection parts	Tie band	2		For securing the cables and the left drain connection port
Tie band	2		For fastening the heat insulator				

2. SELECTING THE LOCATION OF THE INDOOR UNIT

Provide a check port on the piping side ceiling for repair and maintenance.

- Install the indoor unit the following conditions are satisfied, after receiving customer approval.
- 1. The indoor unit must keep a maintenance space.
- 2. The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spreading of air throughout the room.



- * If the height from floor to ceiling exceeds three meters, air flow distribution deteriorates and the effect is decreased.
3. The installation position must be able to support a load four times the indoor unit weight.
 4. The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
 5. The indoor unit must allow easy draining.
 6. The indoor unit must allow easy connection to the outdoor unit.
 7. The indoor unit must be at least 3m away from any noise-generating equipment. The electrical wiring must be shielded with a steel conduit.
 8. If the power supply is subject to noise generation, add a suppressor.
 9. Do not install the indoor unit in a laundry.

NOTE ● Thoroughly study the following installation locations:

1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the fan, and the fin of the heat exchanger, resulting in heat exchange reduction, spraying, dispersing of water drops, etc. In these cases, take the following actions:

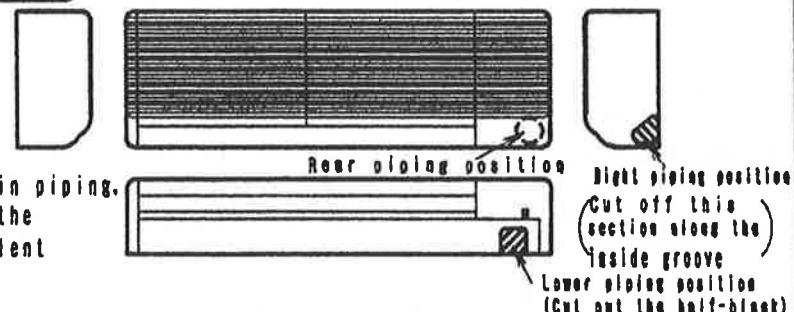
- Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
- Make enough distance from cooking room to install the air conditioner in such place where it may not suck in oily steam.

-
2. Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.
 3. Avoid places where inflammable gas is generated, flows in, is stored or vented.
 4. Avoid places where sulfurous acid gas or corrosive gas is generated.
 5. Avoid places near high frequency generators.

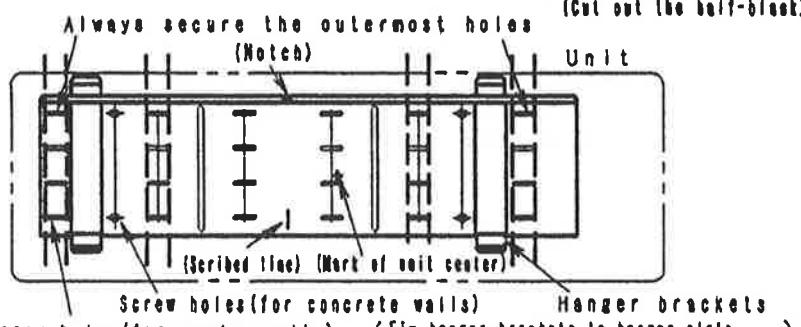
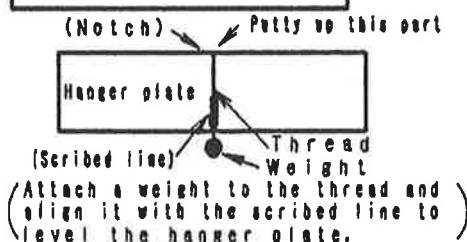
3. INSTALLATION OF INDOOR UNIT

Direction of piping

- It is able to be piping to the rear, right, or lower part of the unit.
- Be sure to execute heat insulation on the refrigerant piping and the drain piping.
- Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance(over 120 degree C)



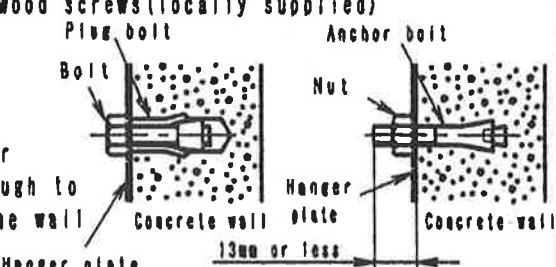
Installing the hanger plate



1. Adjust the hanger plate position until the screw holes align with the center of the column.
2. Secure the hanger plate on the column using the #5.8 wood screws (locally supplied)

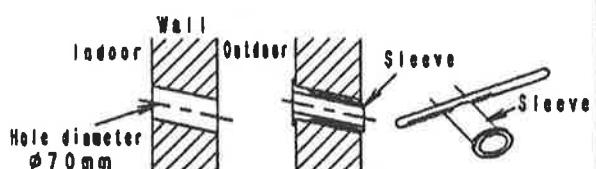
Concrete wall:

1. Drill holes at the desired positions on the wall, then drive plug or anchor bolts (M10 or W3/8) in the holes.
 2. Secure the mounting plate with bolts or nuts. If anchor bolts are to be used, drill holes in the wall deep enough to allow the bolt heads to protrude less than 13mm from the wall.
- Before installing the Indoor unit, make sure that the hanger plate has been installed properly.**



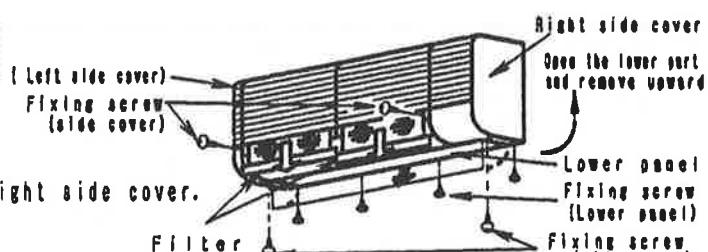
Drilling the wall

1. The hole must be drilled so that it angles down from the indoor to the outdoor side
2. Always install an insulating sleeve (such as vinyl chloride tubes) in the hole.



How to remove the side cover and the lower panel

1. Remove the suction filters.
2. Remove the fixing screws, and remove the lower panel downward.
3. Remove the fixing screws(2pcs.) of the right side cover.
4. Open the lower part of right side cover, and remove the right side cover upward.



Bending the pipe and drain hose

- Be careful not to crush it during bending.
- Tape the pipings and drain hose as shown in the figure below to prevent them from protruding from the rear of the unit

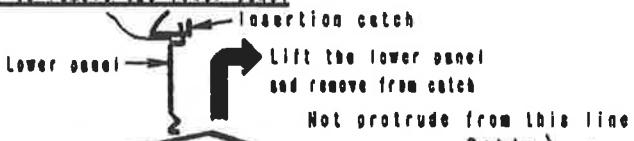
CAUTION

Crushing the refrigerant pipe, decreases the refrigerant flow rate and the cooling capacity.

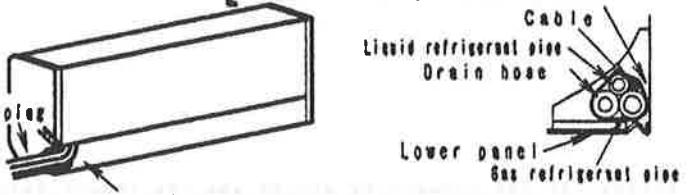
Right-hand piping

Bend the pipe while holding the bent portion by hand. The pipe bend should be as round as possible.

How to remove the lower panel



Not protrude from this line

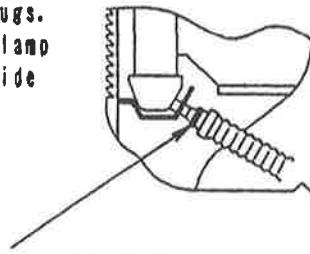


Drain piping from the left side

- It is possible to connect the drain hose from the left side also. In this case, change the rubber plugs (for both inside and outside).
- Use pliers or a screwdriver to remove the rubber plugs.
- Tie the drain hose connection part using the cord clamp (accessory) when connecting the drain to the left side (to prevent it from coming loose).



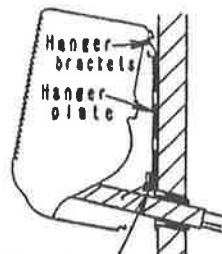
Outside rubber plug



Use the accessory tie band
to prevent it from coming loose.

Installing the indoor unit

- Thread the pipe through the hole in the wall, and hook the unit over the top edge of the hanger plate.
- Move the unit laterally to make sure that it is hooked firmly on the hanger plate.
- Install the indoor unit on the level or rightward down.
- By using adjusting screws(M5 hex head screws), the unit can move downward 10mm.

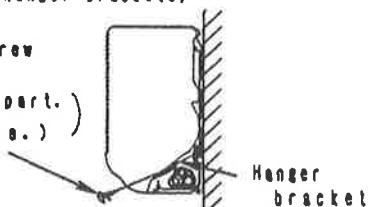


Adjusting screws (2 sets)
(For fixing hanger brackets)

Fixing the indoor unit

After adjustment, fix the indoor unit on the hanger plate using tapping screws(accessories)

tapping screw
(accessories)
(Fix from air inlet part.)
both ends (2 sets.)



Hanger bracket

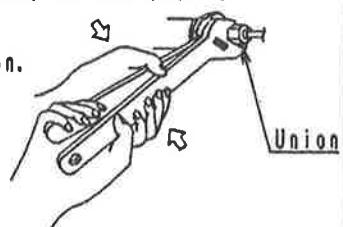
4. REFRIGERANT PIPING

Refrigerant piping is particularly important. Refrigeration cycle of the separate type air conditioners is accomplished by perfect work.

- Brazing for piping
 - Execute brazing before tightening the flare nut.
 - Brazing must be executed while blowing nitrogen gas.
(This prevents generation of oxidized scale in copper pipe.)
- Amount of refrigerant
Before shipped at the factory, the air conditioner (outdoor) is charged with refrigerant, the amount of which depends on the type of the air conditioner and is indicated on the name plate(outdoor).
- Additional charging.

Caution As to refrigerant amount, see the manual for installation work of outdoor unit.

- When there is a lot of brazings for long piping, install a strainer midway of the piping.
(The strainer is locally supplied.)
- Use clean copper pipe with inner wall surface free from rust and dust.
Blow nitrogen gas or air to blow off dust in the pipe before connection.
- Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times.
(This will result in hardening the pipe.)
- After deforming the piping, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.
- Connect pipe to the service valve which is located below the outdoor unit.
- After completed the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.



Vacuum drying

After completing the piping connection, execute vacuum drying for the connecting piping and the indoor unit. The Vacuum drying must be carried out using the service ports of both the liquid and gas side valves.

CAUTION

Use two wrenches and tighten with regular torque.

Flare nut fastening torque N·m (kgf·cm)			
Φ9.52mm	42 (430)	Φ15.88mm	65 (660)
Φ12.7mm	55 (560)	Φ19.05mm	100 (1020)

Model	Liquid side piping	Gas side piping
P22・P36・P45 type	Φ9.52mm	Φ12.7 mm
P56・P71 type	Φ9.52mm	Φ15.88mm

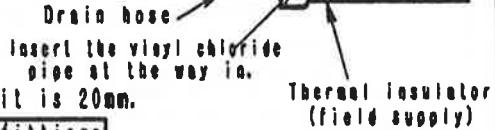
5. INDOOR UNIT DRAIN PIPING

- Be sure to execute heat insulation on the drain piping.

Hard PVC pipe
(Field supply, inside diameter φ20mm.)

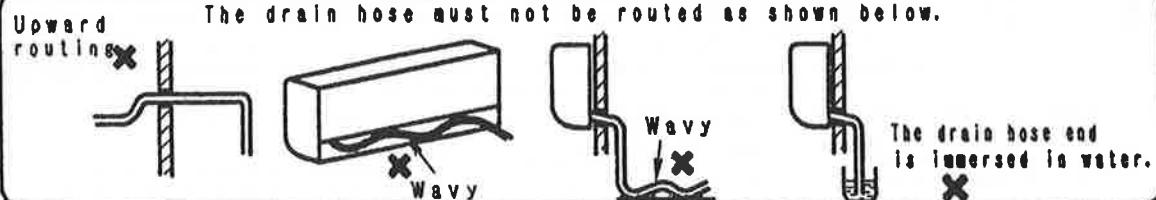
- Heat insulation material: Polyethylene foam with thickness more than 8 mm
- Drain piping must have down-slope(1/50 to 1/100); be sure not to provide up-and-down slope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port at indoor unit.
- The outside diameter of the drain connection at the door unit is 20mm.

Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings



CAUTION

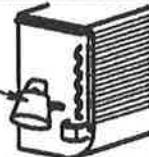
The drain hose must not be routed as shown below.



Drain test

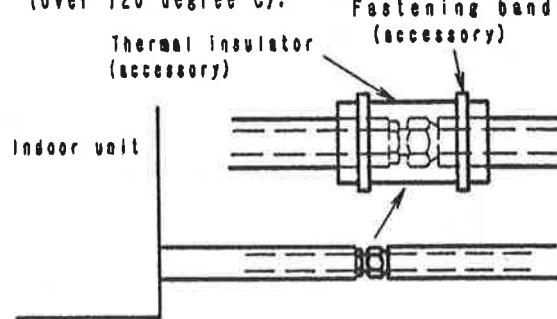
- Upon completion of the final adjustment, pour water into the drain pan on the left of the unit and make sure that it flows smoothly.

Removing the left side cover and pour water.



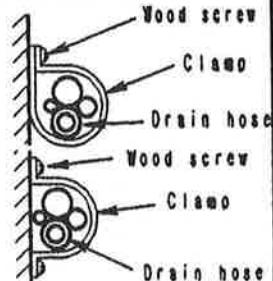
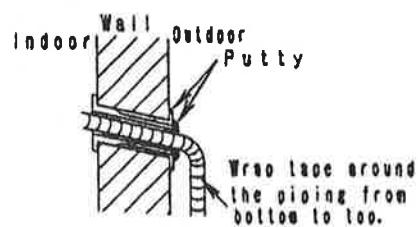
6. THERMAL INSULATION OF PIPING WALL SEAL

- Use the thermal insulation for the refrigerant piping which has an excellent heat-resistance (over 120 degree C).



Wall seal

Securing the piping



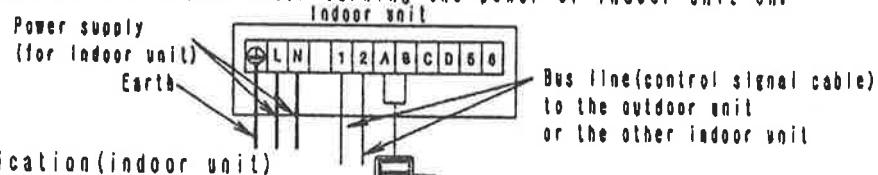
7. ELECTRICAL WIRING

As to main power source and cable size of outdoor unit, read the installation manual attached to the outdoor unit.

⚠ Warning	The unit must be installed in accordance with applicable national and local regulations. The unit installed by a professional installer must be supplied from a dedicated electrical circuit. All electric work must be carried out by a qualified technician according to proper technical standards for electrical work and according to installation manual for installation work. If circuits with insufficient capacity are used, or if electrical work is not carried out properly, electric shocks or fire may result.
⚠ Caution	Be sure to install a leakage current breaker or circuit breaker to the main power supply, otherwise electric shocks may result.
⚠ Caution	Be sure to connect the unit to secure earth connection. (with a earth resistance of 100Ω or less) If the earthing work is not carried out properly, electric shocks may result. 
⚠ Caution	Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

1. Select a power source that is capable of supplying the current required by the air conditioner.
2. Feed the power source to the unit via a distribution switch board designed for this purpose. the switch should disconnected all poles with a contact separation of at least 3 mm.
3. The terminal screws inside the control box may be loose due to vibration during transport. Check the screws for loose connection. (Running the air conditioner with loose connection can overload and damage electrical components.)
4. Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
5. Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires. (The earth line is also similar)
6. If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off again until at least 1 minute has passed.
7. Be sure to turn off the main power before installing and connecting the remote controller.
8. Do not operate remote controller within 1 minute after turning the power of indoor unit on.

CABLE SPECIFICATION



*Power supply cable specification(indoor unit)

Use a standard power cord for Europe.
(such as H05RN-F or H07RN-F which conforms to CENELEC(HAR) rating specifications.)
Minimum wire size 2.5mm².

*Control signal cable specification(1 pair(2 wires) no shield)

Use a instrumentation cable 0.75mm²~1.0mm²
•Resistance:within 27Ω/km •Static capacity:within 60nF/km
The use of cable with shield is a strict prohibition.

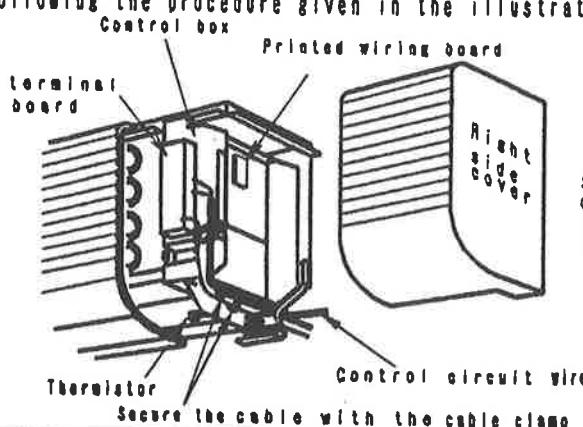
*Remote controller cable specification

Use sheathed vinyl cord or cable with area 0.5mm² to 2mm²
•The remote controller cord can be up to 500m long.

For details the cable connection,please refer to the outdoor unit installation manual.

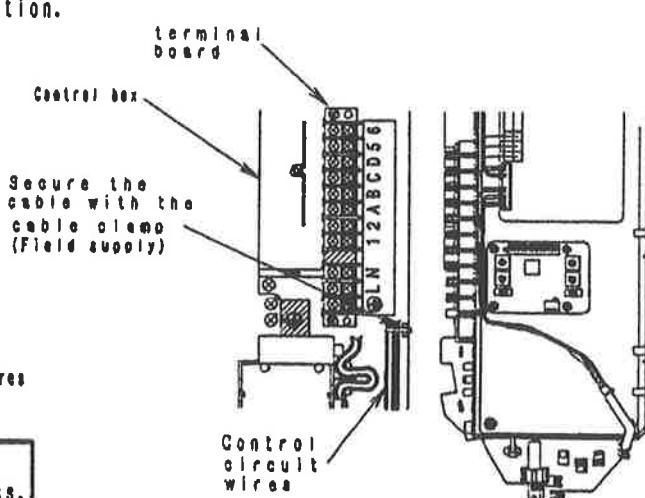
CONNECTING THE WIRES TO THE CONTROL BOX

- Remove a one mounting screw, remove the control box cover, and then connect the wires by following the procedure given in the illustration.



Caution

Make sure that screws of the terminal are free from looseness.



8. SETTING ADDRESS OF UNIT

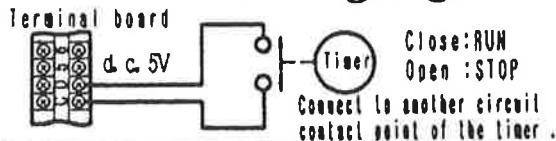
It is necessary to set addresses for the indoor units, the outdoor units, and the remote controllers.

If these settings are not done, the equipment will not operate correctly.

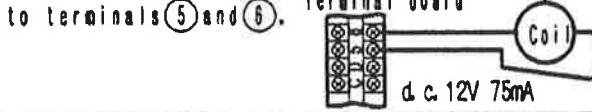
Refer to 「ADDRESS SETTING MANUAL」 affixed to the outdoor unit and 「INSTALLATION MANUAL」 affixed to the remote control for the address setting.

9. AS FOR TIMER AND FAN OUTPUT

Timer setting For use of a timer (locally supplied), connect the contactor of the timer to terminals **C** and **D**.



Fan output
Connect the contactor of the relay (locally supplied) to terminals **5** and **6**.



10. PRECAUTIONS IN TEST RUN

- The initial power supply must provide at least 90% of the rated voltage. Otherwise, the air conditioner should not be operated.

- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to "TEST OPERATION" in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation, follow the procedure given below.



- First, press the run(**①**) button.
- Then press the TEST RUN button within 1 minute of pressing the run(**①**) button.
- Next, select the operation modes.
- The temperature of the indoor unit pipes will be shown on the temperature setting display. (At the start of test operation, it may take up to 1 minute for airconditioner number, switching time and other displays to appear.)
- After operation modes have been selected, momentarily stop the compressor.
- Press the run(**①**) button or the TEST RUN button once more to cancel test operation mode.

NOTE1

Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE2

When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. If heating mode is selected first, it may cause problems with operation of the compressor. (Heat pump model only)

NOTE3

Test operation should be carried out for a minimum of 5 minutes. (Test operation will be canceled automatically after 30 minutes.)

NOTE4

Test operation mode should always be canceled once test operation itself has been completed.

11. CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

- After completing work, be sure to measure and record trial run properties, and store measuring data, etc.
- Measuring items are room temperature, outside temperature, suction temperature, blow out temperature, wind velocity, wind volume, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperature, compressive pressure, airtight pressure.
- As to the structure and appearance, check following items.

- Is circulation of air adequate?
- Is draining smooth?
- Is heat insulation complete (refrigerant and drain piping)?
- Is there any leakage of refrigerant?
- Is the address setting operated?

- Is remote controller switch operated?
- Is there any faulty wiring?
- Are not terminal screws loosened? (N·cm(kgf·cm))
M4...157~196 (16~20), M5...196~245 (20~25)
M6...245~294 (25~30), M8...588~647 (60~66)

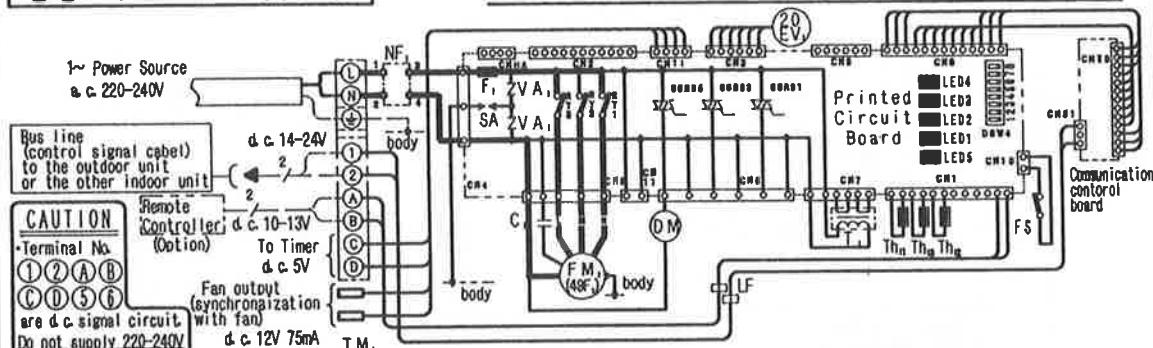
12. HAND OVER

- Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.).

As for work specifications of the outdoor unit, read the **MANUAL FOR INSTALLATION WORK** attached to the outdoor unit.

CS-P**DM1HP

ELECTRIC CIRCUIT DIAGRAM



PRECAUTIONS IN TEST RUN

- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to "TEST OPERATION" in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation, follow the procedure given below.
- Press the TEST RUN switch within 1 minute of pressing the RUN (①) switch. If more than 1 minute passes, test operation will not commence and so you will need to press the RUN (①) switch once more and repeat the operation.
- Use the OPERATION MODE switch to select the operation mode. When test operation starts, TEST will appear in the timer display of the LCD. The indoor unit will run operation mode indicated at this time. (COOL, HEAT, etc.)
- Test mode can be cancelled by pressing the RUN switch, the TEMPERATURE SETTING ▲ or ▼ switches, the OPERATION MODE switch, the FAN SPEED switch or the RESET switch.
- During test operation, be sure to run the units in cooling mode first. If heating mode is selected first, it may cause problems with operation of the compressor. (heat pump model)
- Test operation should be carried out for a minimum of 5 minutes. (Test operation will be canceled automatically after 30 minutes.)
- Test operation mode should always be canceled once test operation itself has been completed.



LEGEND

20EV	Expansion Valve
48F	Internal Thermostat for FM
C	Capacitor for FM
F	Fuse
FM	Fan Motor (Indoor Unit)
T	Transformer
TM	Terminal Board
NF	Noise Filter
DM	Drain u Motor
FS	Float Switch (Line Cut)
LF	Line Filter
Th ₁	Thermistor (Temperature)
Th ₂	Thermistor (Heat Exchanger Entrance)
Th ₃	Thermistor (Heat Exchanger Exit)
PCB	Printed Circuit Board
SSR ₁₋₄	Solid state relay for IC Control
RY ₁₋₄	Power relay for IC Control
VA	Varistor
SA	Surge absorber
CN	Connector

SELF-DIAGNOSIS FUNCTION

The LED5 (green) illuminates to indicate that the microprocessor on the printed circuit board is operating normally.

If the LED is switched off or is flashing irregularly, check the power supply, and turn it off and then back on again.

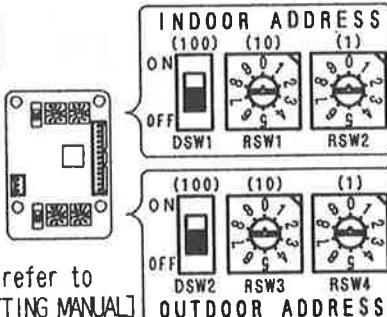
- The display on the wired remote control unit and the self-diagnosis LEDs (red) on the printed circuit board in the outdoor unit can be used to indicate where the location of a problem is. Refer to the table below to remove the cause of the problem, and then re-start the unit.
- If the "CHECK" display on the wired remote control unit is flashing, the details of the problem(s) are displayed on the timer display screen each time the CHECK button is pressed. Further details of the problem can be displayed by pressing the TIMER SET button while the general problem details are being displayed.
- If the "CHECK" display on the wired remote control unit is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER ▲ or ▼ buttons. Press the CHECK button once more to return to the normal display.
- If the problem disappears and operation returns to normal, the CHECK display on the remote control unit will switch off, but the self-diagnosis LED will remain illuminated until operation is resumed.

Remote control	Indoor LED	Outdoor LED	Location of problem	Check location
All normal	1 2 3 4	LED		
F1 6 -01	*	*	Drain level float switch	Drain pump and drain pipe connectors CN6 & CN10 (indoor)
F1 8 -01	*	*	Louver switch	Louver motor, louver motor connector, CN1 & CN6 (indoor)
F2 0 -02	*	*	Indoor temperature thermistor	Indoor temperature thermistor wire or connector CN1 (indoor)
F2 1 -01	*	*	Remote control thermistor	Remote control thermistor
F2 2 -01	*	*	Pipe temperature thermistor Th13	Pipe temperature thermistor wire, or connector CN1 (indoor)
F2 5 -01	*	*	Pipe temperature thermistor Th12	Pipe temperature thermistor wire, or connector CN1 (indoor)
F2 6 -01	*	*	Centralized control address overlay	Settings of address switch
F2 6 -02	*	*	Remote control transmission wire	Remote control unit wire and connection terminals
F2 7 -01	*	*	Remote control transmission	Transmission wave pattern
F2 7 -02	*	*	Indoor/outdoor unit transmission wire	Indoor/outdoor connection wire and terminals, or power supply
F2 8 -01	*	*	Indoor/outdoor unit transmission	Transmission wave pattern
F2 9 -01	*	*	Setting error	Contact the place of purchase
F3 0 -+*	*		Total horsepower for the indoor unit system is less than the minimum or exceeds the maximum given below. System error.	Check the total capacity and the number of indoor units.
F3 1~F3 8 -+*	*			Refer to the section on outdoor unit self-diagnosis.
F4 0 -+*	*	*		

Refer to the section on outdoor unit self-diagnosis.

Unit address setting

Communication control board



For details, refer to
[ADDRESS SETTING MANUAL]

MODEL NAME

CU-

SYSTEM NO.

Fill in model name of the outdoor unit and the system.

E 7 - 1 0 1 4 1 1

CS-P*UM1HP Electric Circuit Diagram

CAUTION

Bus line control signal cable) to the outdoor unit or the other indoor unit

Remote Controller (option)

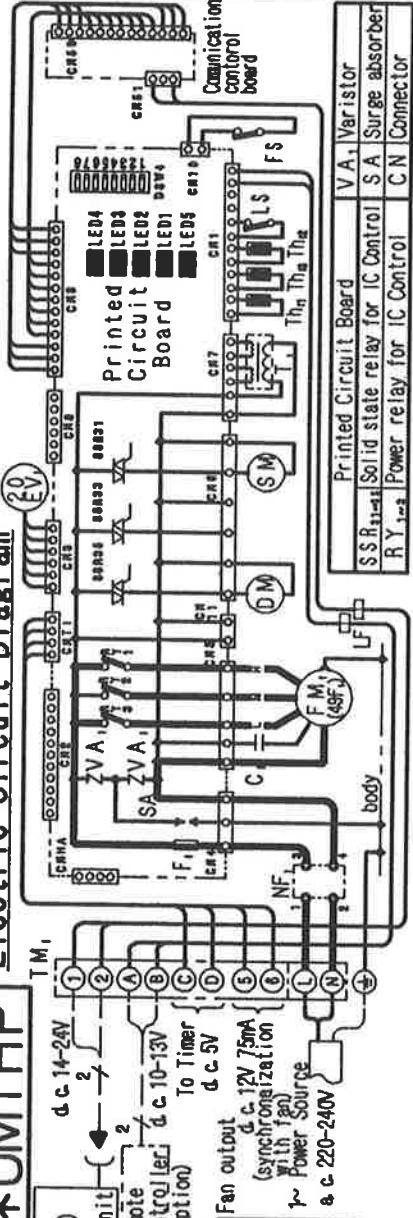
Terminal No.

① ② A ③ B ④ C ⑤ D ⑥ E

are d.c signal circuit
Do not supply 220-240V

E7-100960

E7-101300



LEGEND	
24EV	Expansion Valve
49F	Internal Thermostat for RM.
C	Capacitor for RM.
F	Fuse
FM	Fan Motor (Indoor Unit)
T	Transformer
TM	Terminal Board
NF	Noise Filter
DM	Drain up Motor
FS	Float Switch (Line Cut)
SM	Swing motor (for Louver)
LS	Limit switch
LF	Line filter
Th1	Thermistor (Temperature)
Th2	Thermistor (Heat Exchanger Entrance)
Th3	Thermistor (Heat Exchanger Exit)

Remote control Indoor LED Outdoor

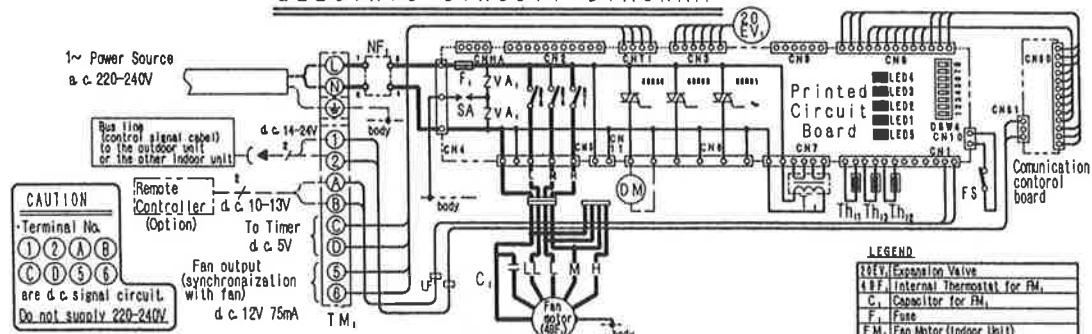
Location of problem

Remote control	Indoor	LED	Outdoor	Check location
Abnormal Detail	1	2	3	4
F 1 5 - 0 1	*	*	*	Drain pump and drain pipe connectors QN8 & QN10 (indoor)
F 1 6 - 0 1	*	*	*	Louver motor, louver motor connector QN1 & QN8 (indoor)
F 2 0 - 0 2	*	*	*	Indoor temperature thermistor
F 2 1 - 0 1	*	*	*	Remote control thermistor
F 2 2 - 0 1	*	*	*	Indoor temperature thermistor Th13
F 2 5 - 0 1	*	*	*	Indoor temperature thermistor Th12
F 2 6 - 0 2	*	*	*	Centralized control address over RS485
F 2 7 - 0 1	*	*	*	Remote control transmission wire
F 2 8 - 0 2	*	*	*	Remote control transmission
F 3 0 - * *	*	*	*	Indoor/outdoor unit transmission wire
F40*-F39 - * *	*	*	*	Indoor/outdoor connection wire and terminals, or power supply
F40*-F39 - * *	*	*	*	Settling problem
F40*-F39 - * *	*	*	*	Total horsepower for the indoor unit system is less than the minimum or exceeds the maximum given below
F40*-F39 - * *	*	*	*	System error.
Outdoor unit				Refer to the section on outdoor unit self-diagnosis.
outdoor to the section on outdoor unit self-diagnosis.				Refer to the section on outdoor unit self-diagnosis.
outdoor to the section on outdoor unit self-diagnosis.				Check the total capacity and the number of indoor units
outdoor to the section on outdoor unit self-diagnosis.				Check the total capacity and the number of indoor units
outdoor to the section on outdoor unit self-diagnosis.				Check the total capacity and the number of indoor units

MODEL NAME	CU -	SYSTEM NO .
Th1	Th2	Th3

Fill in model name of the outdoor unit and the system.

ELECTRIC CIRCUIT DIAGRAM



- PRECAUTIONS IN TEST RUN** The initial power supply must provide at least 90% of the rated voltage.
- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to "TEST OPERATION" in the outdoor unit installation manual.)
 - If using the remote control unit to carry out test operation, follow the procedure given below.
 - Press the TEST RUN switch within 1 minute of pressing the RUN(①) switch. If more than 1 minute presses, test operation will not commence, and so you must need to press the RUN(①) switch once more and repeat the operation.
 - Use the OPERATION MODE switch to select the operation mode. When test operation starts "TEST" will appear in the timer display of the LCD. The indoor unit will run operation mode indicated at this time (COOL, HEAT, etc.)
 - Test mode can be cancelled by pressing the RUN switch, the TEMPERATURE SETTING △ or ▽ switches, the OPERATION MODE switch, the FAN SPEED switch or the RESET switch.
- (Note ①) During test operation be sure to run the units in cooling mode first.
(Note ②) If heating mode is selected first, it may cause problems with operation of the compressor.
(Note ③) Test operation should be carried out for a minimum of 5 minutes.
(test operation will be canceled automatically after 30 minutes.)
(Note ④) Test operation mode should always be canceled once test operation itself has been completed.

SELF-DIAGNOSIS FUNCTION
The LED5(green) illuminates to indicate that the microprocessor on the printed circuit board is operating normally.
If the LED is switched off or is flashing irregularly, check the power supply and turn it off and then back on again.

- The display on the wired remote control unit and the self-diagnosis LEDs (red) on the printed circuit board in the outdoor unit can be used to indicate where the location of a problem is. Refer to the table below to remove the cause of the problem, and then re-start the unit.
- If the "CHECK" display on the wired remote control unit is flashing, the details of the problem(s) are displayed on the timer display screen each time the CHECK button is pressed. Further details of the problem can be displayed by pressing the TIMER SET button while the general problem details are being displayed.
- If the "CHECK" display on the wired remote control unit is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER ▲ or ▼ buttons. Press the CHECK button once more to return to the normal display.
- If the problem disappears and operation returns to normal, the CHECK display on the remote control unit will switch off, but the self-diagnosis LED will remain illuminated until operation is resumed.

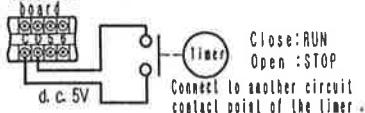
Remote control	Indoor LED	Outdoor LED	Location of problem	Check location
All normal	① ② ③ ④	LED5	None	
F1.0 - 0.1	①	①	Drain level float switch	Main pump and drain pipe connector CNH A (indoor)
F1.0 - 0.1	①	②	Lower switch	Lower noise, lower noise connector CNH A (indoor)
F2.0 - 0.1	①	②	Indoor temperature thermistor	Indoor temperature thermistor wire or connector CNH (indoor)
F2.0 - 0.2	①	②	Remote control thermistor	Remote control thermistor
F2.1 - 0.1	①	②	Pipe temperature thermistor Th1	Pipe temperature thermistor wire or connector CNH (indoor)
F2.2 - 0.1	①	②	Pipe temperature thermistor Th2	Pipe temperature thermistor wire or connector CNH (indoor)
F2.5 - 0.1	①	②	Centralized control signal overheat	Centralized control signal overheat
F2.6 - 0.2	①	②	Remote control transmission	Transmission wave pattern
F2.7 - 0.1	①	②	Indoor/outdoor unit transmission	Indoor/outdoor unit transmission
F2.8 - 0.1	①	②	Setting problem	Contact the place of purchase.
F3.0 - 0.1 *	①	②	Total horsepower for the indoor unit system is less than the minimum or exceeds the maximum given below.	Check the total capacity and the number of indoor units.
F3.1-F3.3 - 0.0	①	②	System error.	Refer to the section on outdoor-unit self-diagnosis.
F4.0 - 0.1	①	②	Outdoor unit	Refer to the section on outdoor-unit self-diagnosis.

AS FOR TIMER AND FAN OUTPUT

Timer setting

For use of a timer (locally supplied), connect the contactor of the timer to terminals ④ and ①.

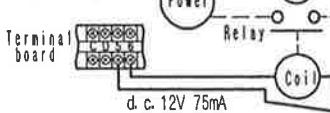
Terminal board



Fan output

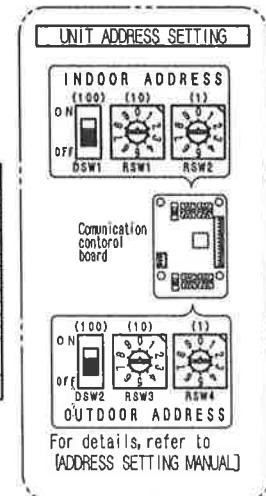
Connect the contactor of the relay (locally supplied) to terminals ⑤ and ⑥.

Terminal board



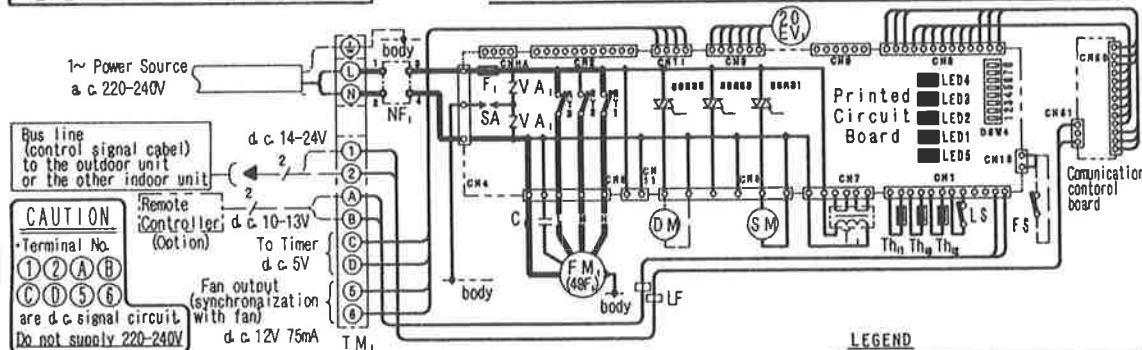
MODEL NAME
CU-
SYSTEM NO.
Fill in model name of the outdoor unit and the system.

E 7-100940



CS-P**KM1HP

ELECTRIC CIRCUIT DIAGRAM



- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to "TEST OPERATION" in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation, follow the procedure given below.
- Press the TEST RUN switch within 1 minute of pressing the RUN (1) switch. If more than 1 minute passes, test operation will not commence, and so you will need to press the RUN (1) switch once more and repeat the operation.
- Use the OPERATION MODE switch to select the operation mode. When test operation starts, "TEST" will appear in the timer display of the LCD. The indoor unit will run operation mode indicated at this time. (COOL, HEAT, etc.)
- Test mode can be cancelled by pressing the RUN switch, the TEMPERATURE SETTING Δ or ∇ switches, the OPERATION MODE switch, the FAN SPEED switch or the RESET switch.
- (Note 1) During test operation, be sure to run the units in cooling mode first. If heating mode is selected first, it may cause problems with operation of the compressor (heat pump model).
- (Note 2) Test operation should be carried out for a minimum of 5 minutes. (Test operation will be canceled automatically after 30 minutes.)
- (Note 3) Test operation mode should always be canceled once test operation itself has been completed.

TEST RUN

SELF-DIAGNOSIS FUNCTION

The LED5 (green) illuminates to indicate that the microprocessor on the printed circuit board is operating normally.

If the LED is switched off or is flashing irregularly, check the power supply, and turn it off and then back on again.

- The display on the wired remote control unit and the self-diagnosis LEDs (red) on the printed circuit board in the outdoor unit can be used to indicate where the location of a problem is. Refer to the table below to remove the cause of the problem, and then re-start the unit.
- If the CHECK display on the wired remote control unit is flashing, the details of the problem(s) are displayed on the timer display screen each time the CHECK button is pressed. Further details of the problem can be displayed by pressing the TIMER SET button while the general problem details are being displayed.
- If the CHECK display on the wired remote control unit is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER Δ or ∇ buttons. Press the CHECK button once more to return to the normal display.
- If the problem disappears and operation returns to normal, the CHECK display on the remote control unit will switch off, but the self-diagnosis LED will remain illuminated until operation is resumed.

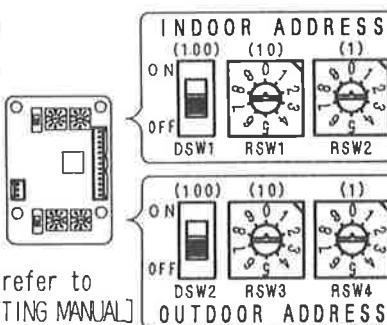
LEGEND

20EV	Expansion Valve
48F	Internal Thermostat for FM
C	Capacitor for FM
F	Fuse
FM	Fan Motor (Indoor Unit)
T	Transformer
TM	Terminal Board
NF	Noise Filter
DM	Drain up Motor
FS	Float Switch (Line Cut)
LM	Louver motor
LS	Louver switch
LF	Line Filter
Th1	Thermistor (Temperature)
Th2	Thermistor (Heat Exchanger Entrance)
Th3	Thermistor (Heat Exchanger Exit)
PCB	Printed Circuit Board
SSR	Solid state relay for IC Control
RY	Power relay for IC Control
V.A	Varistor
S.A	Surge absorber
C.N	Connector

Remote control	Indoor LED	Outdoor	Location of problem	Check location
Abnormal	Detail 1 2 3 4	LED		
F15 -01	*	*	Drain level, float switch	Drain pump and drain pipe connectors CN8 & CN10 (indoor)
F16 -01	*	*	Louver switch	Louver motor, louver motor connector, CN1 & CN8 (indoor)
F20 -01	*	*	Indoor temperature thermistor	Indoor temperature thermistor wire or connector CN1 (indoor)
F21 -02	*	*	Remote control thermistor	Remote control thermistor
F22 -01	*	*	Pipe temperature thermistor Th13	Pipe temperature thermistor wire, or connector CN1 (indoor)
F25 -01	*	*	Pipe temperature thermistor Th12	Pipe temperature thermistor wire, or connector CN1 (indoor)
F26 -01	*	*	Centralized control address overlap	Settings of address switch
F26 -02	*	*	Remote control transmission wire	Handle control unit wire and connection terminals
F27 -01	*	*	Remote control transmission	Transmission wave pattern
F27 -02	*	*	Indoor/outdoor unit transmission wire	Indoor/outdoor connection wire and terminals, or power supply
F28 -01	*	*	Indoor/outdoor unit transmission	Transmission wave pattern
F30 -**	*		Setting problem	Contact the place of purchase
F31-F38 -**	*		Total horsepower for the indoor unit system is less than the minimum or exceeds the maximum given below. System error.	Check the total capacity and the number of indoor units.
F40w	-**	*	Outdoor unit	Refer to the section on outdoor unit self-diagnosis.

Unit address setting

Communication control board



For details, refer to
[ADDRESS SETTING MANUAL]

MODEL NAME

CU-

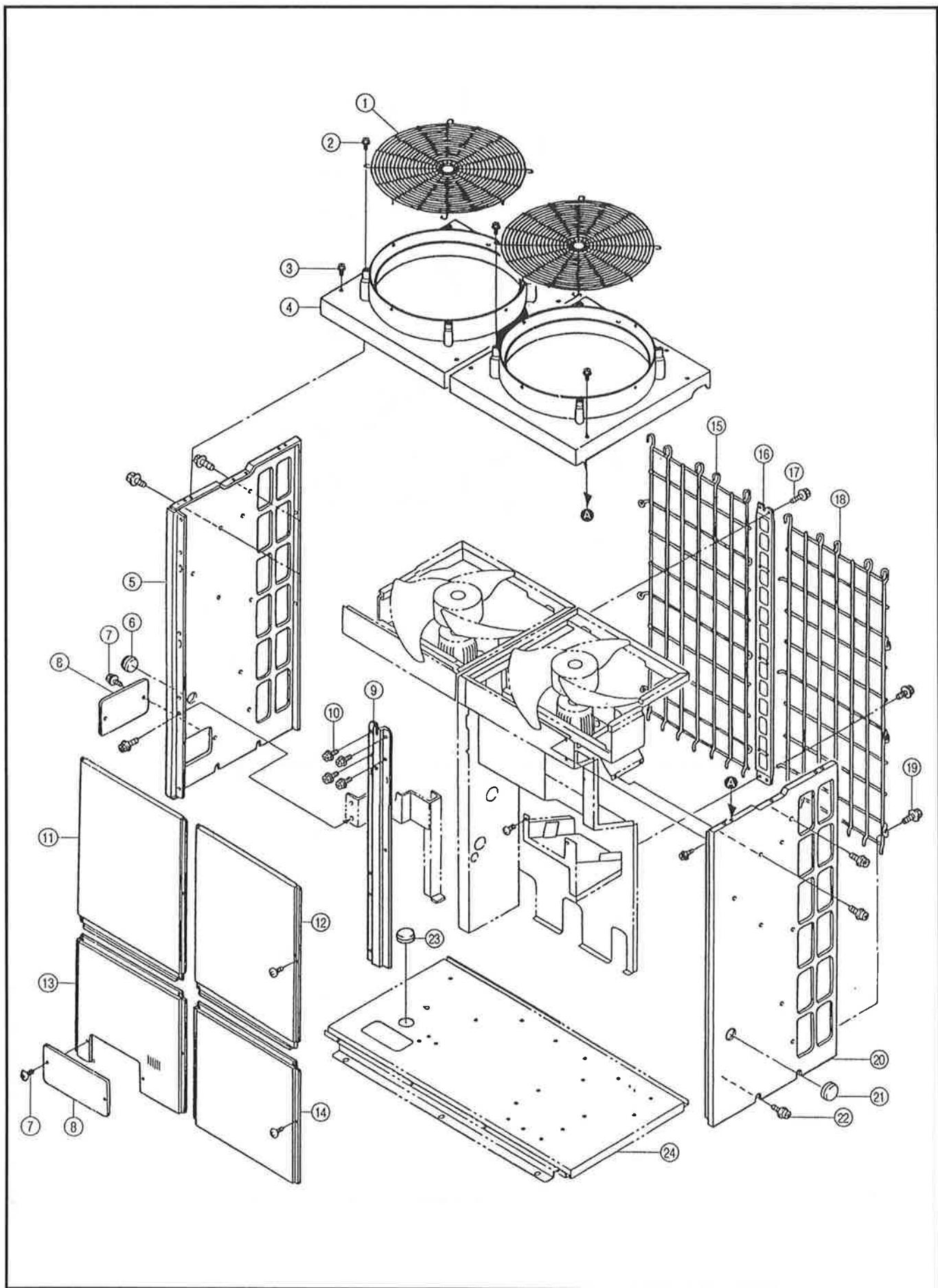
SYSTEM NO.

Fill in model name of the outdoor unit and the system.

E 7 - 1 0 0 9 5 0

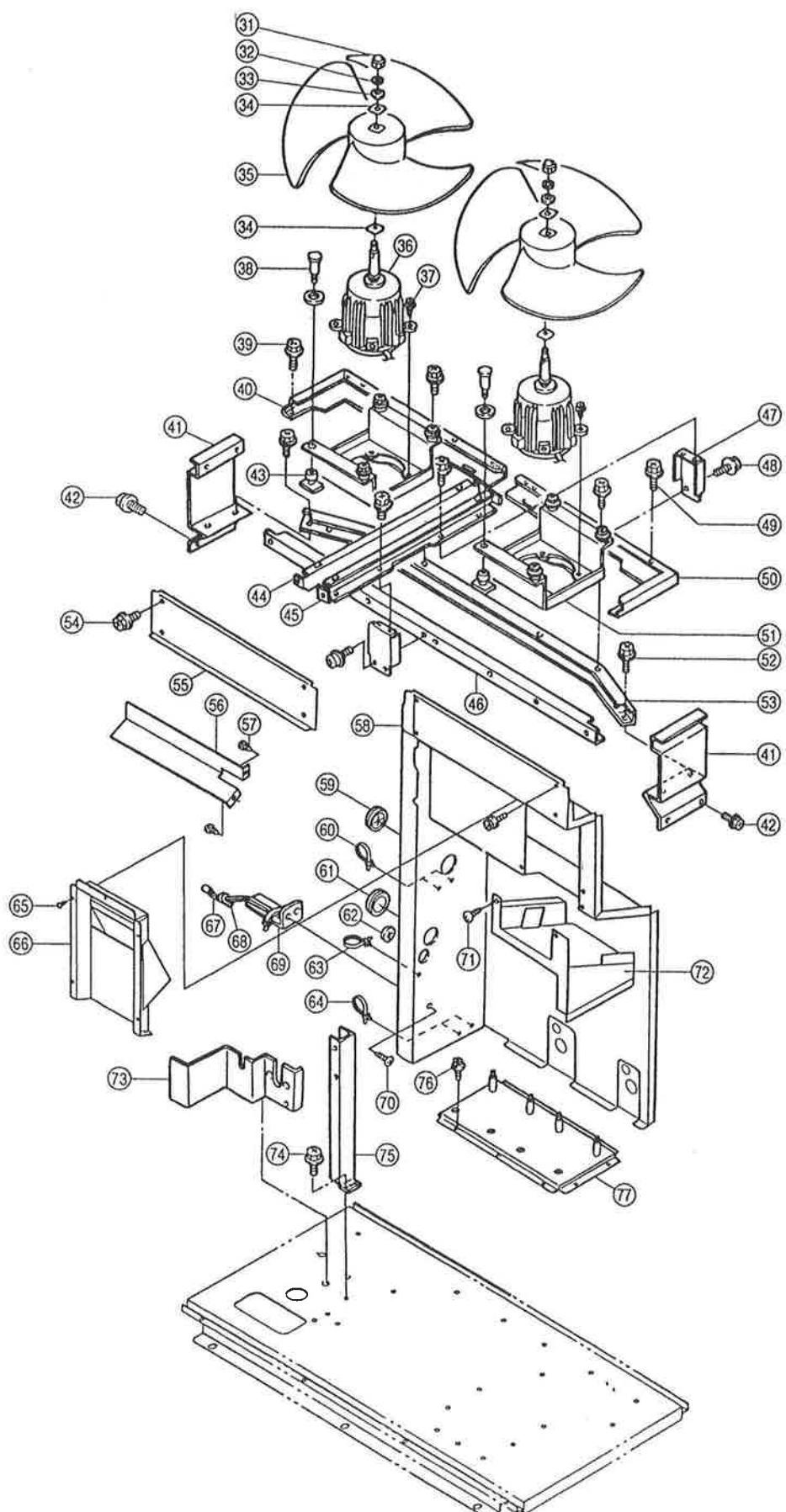
■CU-P224MX1XP,CU-P280MX1XP

CU-P280MX1XP



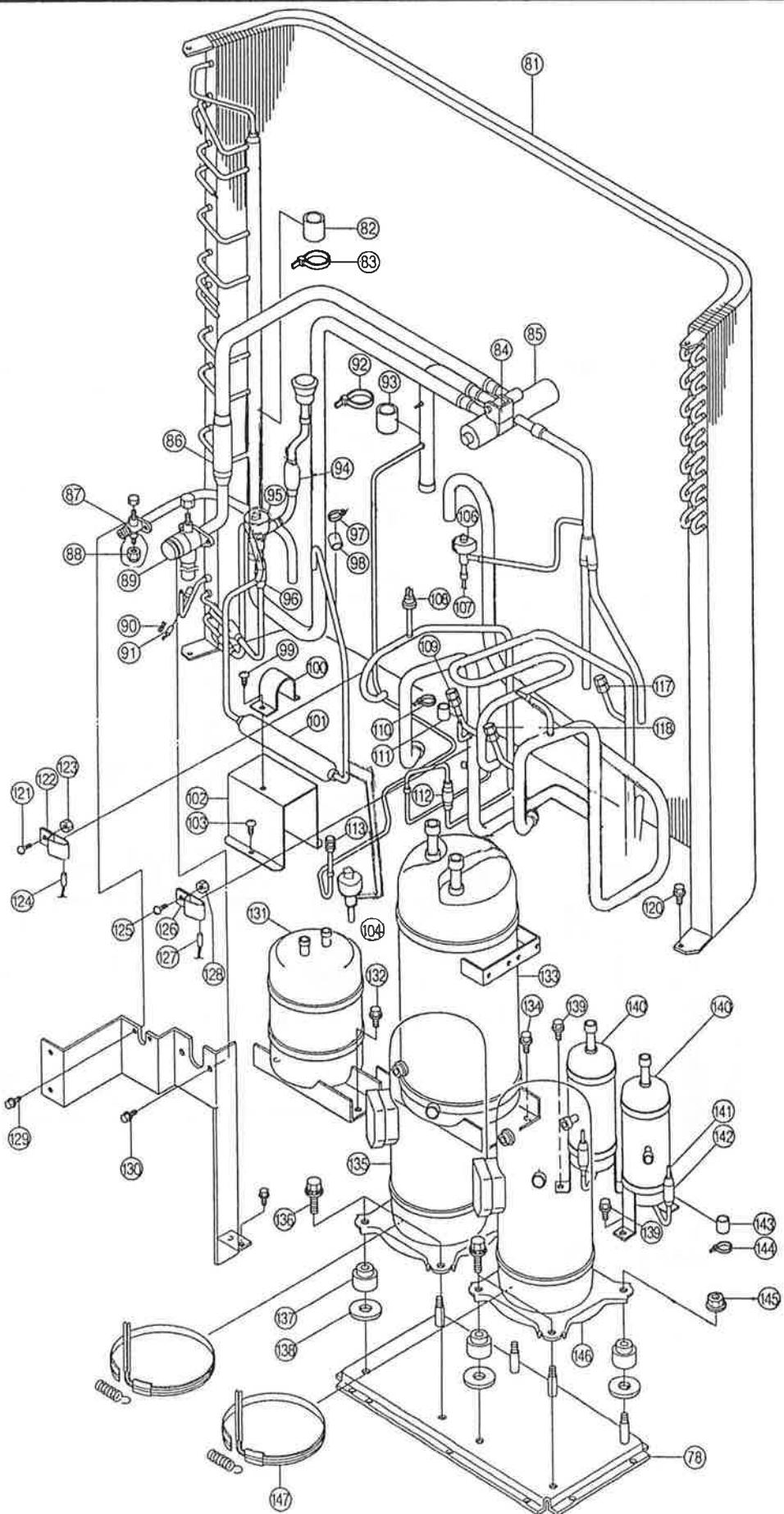
■CU-P224MX1XP,CU-P280MX1XP

CU-P280MX1XP



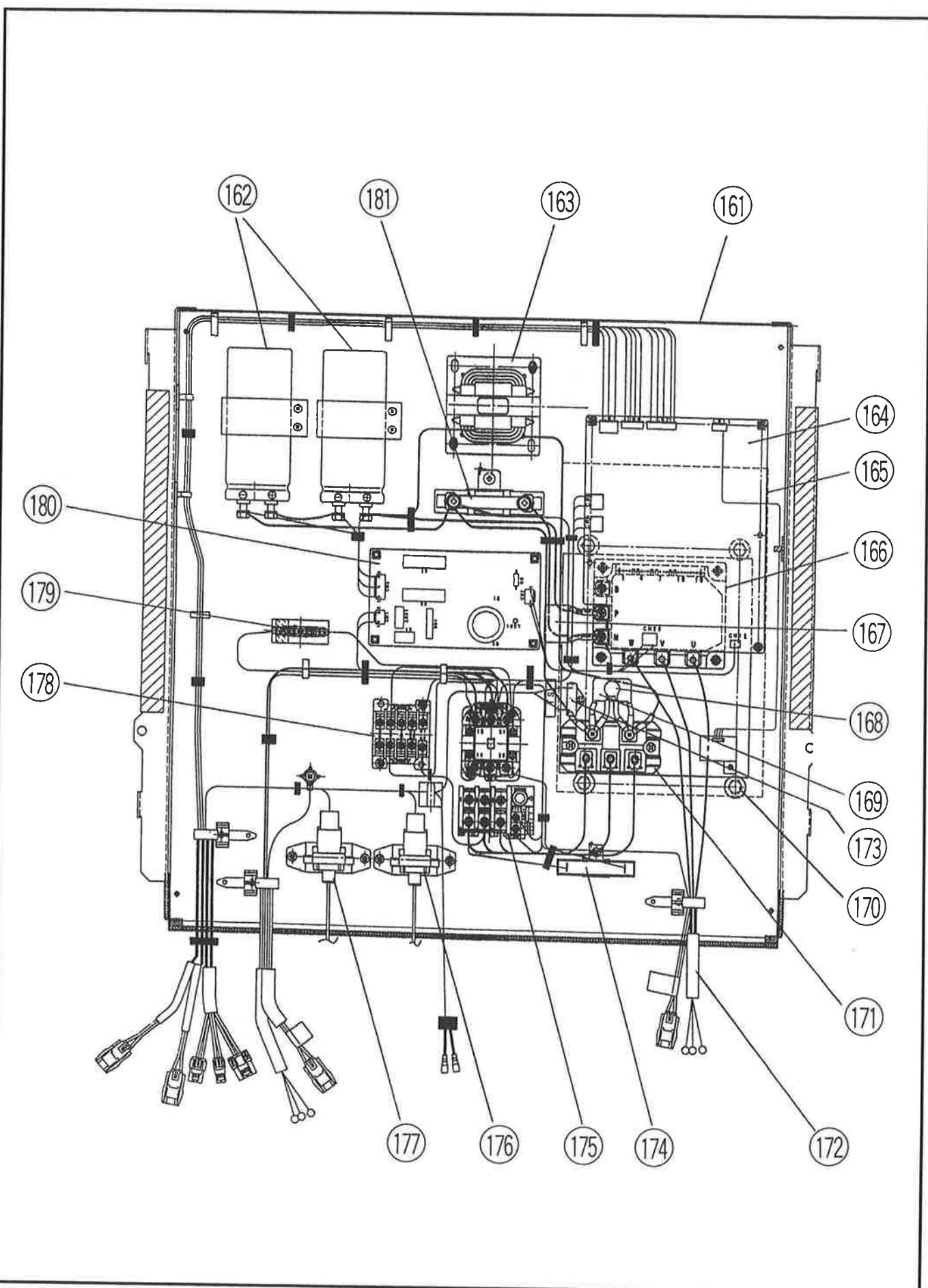
■CU-P224MX1XP,CU-P280MX1XP

CU-P280UM1XP



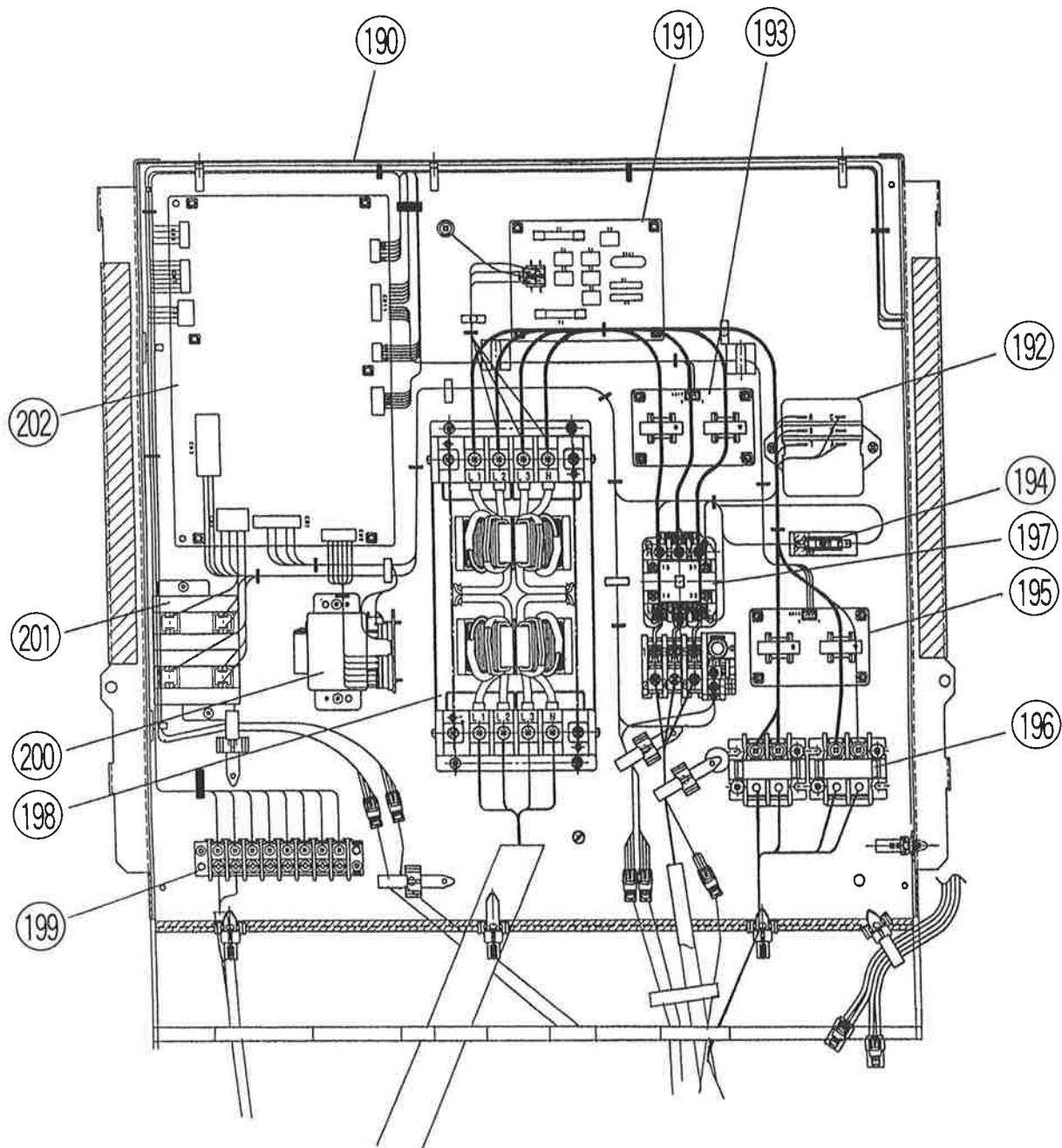
■CU-P224MX1XP,CU-P280MX1XP

CU-P280UM1XP



■CU-P224MX1XP,CU-P280MX1XP

CU-P280UM1XP



13.REPLACEMENT PARTS<OUTDOOR UNIT>

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			P224MX1XP	P280MX1XP	
1	Fan Guard As	02-880080	2	2	
2	Hexagonal Screw 5TS25 With Flange	08-406170	8	8	
3	Hexagonal Screw 5TS12 With Flange	38-194120	12	12	
4	Panel Top As	42-573690	2	2	
5	Panel Side(L) As	42-576120	1	1	
5	Hexagonal Screw 5TS12 With Flange	38-194120	15	15	
6	Rubber Bush(60)	08-405730	1	1	
7	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
8	Panel Seal Cover	02-844240	2	2	
9	Panel Center Front As	42-576130	1	1	
10	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
11	Panel Front Top	02-863920	1	1	
11	Hexagonal Screw 5TS12 With Flange	38-194120	2	2	
12	Panel Front Top	02-863920	1	1	
12	Hexagonal Screw 5TS12 With Flange	38-194120	2	2	
13	Panel Front Bottom(A)	E2-100280	1	1	
13	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
14	Panel Front Bottom(B)	02-864530	1	1	
14	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
15	Condenser Gaurd(L)	02-844200	1	1	
16	Panel Back Center	02-842900	1	1	
17	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
18	Condenser Guard(R)	02-843110	1	1	
19	Hexagonal Screw 5TS12 With Flange	38-194120	6	6	
20	Panel Side(R) As	F2-000230	1	1	
21	Rubber Bush(60)	08-405730	1	1	
22	Hexagonal Screw 5TS12 With Flange	38-194120	15	15	
23	Rubber Bush(60)	08-405730	1	1	
24	Unit Bass As	F2-000130	1	1	
31	Hexagonal Nut 10	08-405980	2	2	
32	10SP Washer	38-491150	2	2	
33	10 Washer	38-491220	2	2	
34	Washer For Propeller Fan	05-857790	4	4	
35	Propeller Fan	05-857360	2	2	※
36	Fan Motor	06-854170	2	2	※
37	Hexagonal Screw 6TS25 With Flange	38-194990	8	8	
38	Hexagonal Screw 6TS30 With Flange	08-406010	8	8	
39	Hexagonal Screw 5TS12 With Flange	38-195430	2	2	
40	Coil Top Seal stay(L)	02-842680	1	1	
41	Motor Stay Holder	02-880310	2	2	
42	Hexagonal Screw 5TS12 With Flange	38-194120	8	8	
43	Mount Fan Stay	06-849930	8	8	
44	Panel Top Stay(L) As	42-553390	1	1	
44	Hexagonal Screw 5TS12 With Flange	38-195430	2	2	
45	Panel Top Stay(R) As	42-553400	1	1	
45	Hexagonal Screw 5TS12 With Flange	38-195430	2	2	
46	Motor Stay Angle(F)	02-873750	1	1	
47	Motor Stay Support	02-842930	1	1	
48	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
49	Hexagonal Screw 5TS12 With Flange	38-195430	2	2	
50	Coil Top Seal stay(R)	02-842690	1	1	
51	Motor Base As	45-591040	1	1	
52	Hexagonal Screw 5TS12 With Flange	38-195250	4	4	
53	Motor Stay Angle(R)	02-873760	1	1	
54	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
55	Seal Panel Top(C) As	E2-100400	1	1	
56	Thermo Holder Guaider	06-843210	1	1	
57	Hexagonal Screw 5TS12 With Flange	38-195430	2	2	
58	Seal Panel As	F2-000380	1	1	
58	Hexagonal Screw 5TS12 With Flange	38-195430	5	5	
59	Rubber Bush(60)	08-405730	1	1	
60	Code Cramp	06-460100	2	2	
61	Rubber Bush(60)	08-405730	1	1	
63	Code Cramp	06-460100	1	1	
64	Cramp Code	39-211010	2	2	
65	Hexagonal Screw 5TS12 With Flange	38-195430	3	3	
72	Heat Sink Guider As	F2-000080	1	1	
73	Valve Holder As	45-900300	1	1	
74	Hexagonal Screw 5TS12 With Flange	38-194120	2	2	
75	Service Valve Stay	05-830150	1	1	
76	Hexagonal Screw 5TS12 With Flange	38-194120	10	10	
77	Compressor Base As	F2-000360	2	2	

13.REPLACEMENT PARTS<OUTDOOR UNIT>

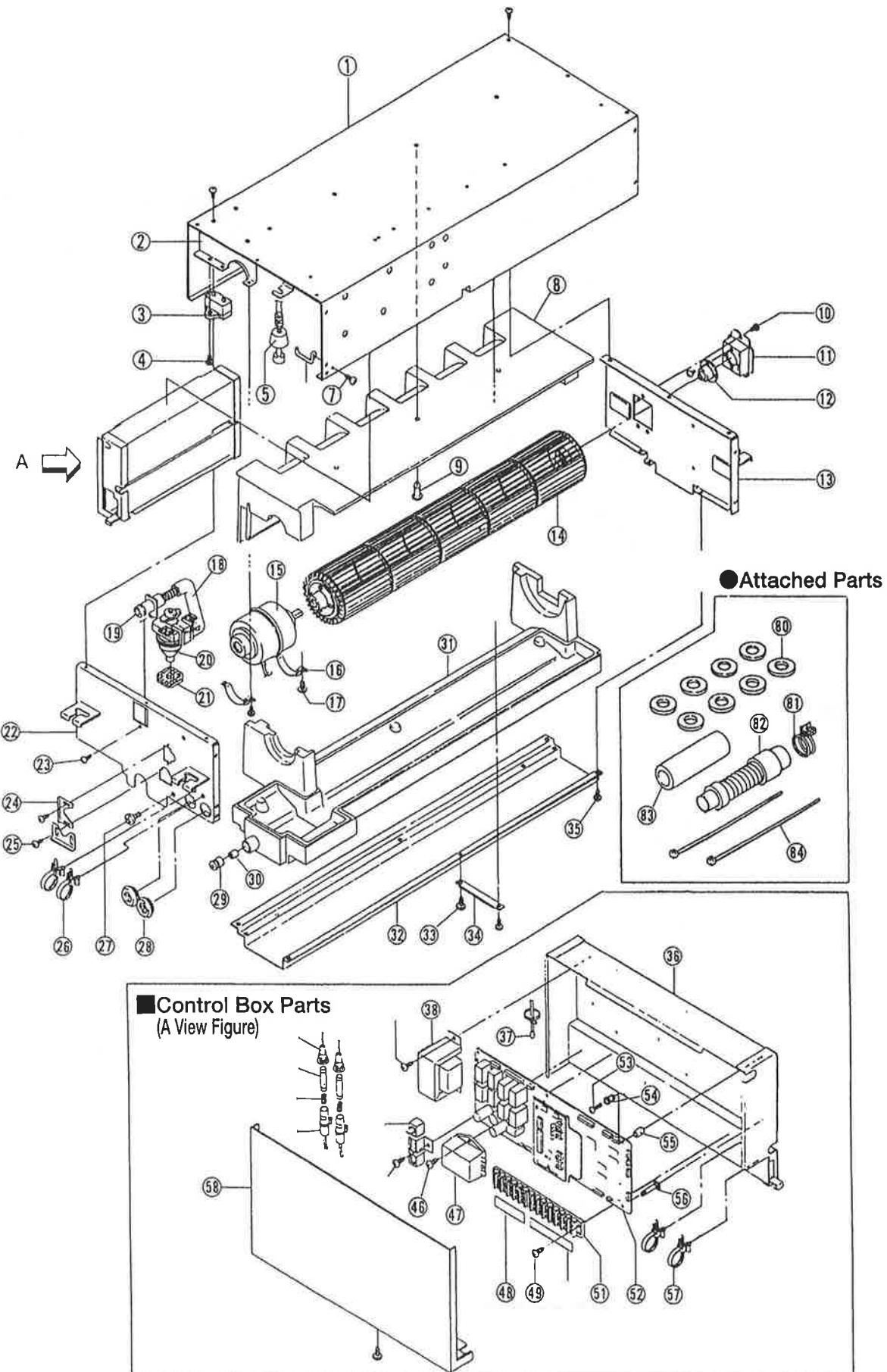
REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			P224MX1XP	P280MX1XP	
81	Coil Condensor	F5-000600	1	—	
81	Coil Condensor	F5-000610	—	1	
82	Pipe Cramp Rubber(Inch)	05-965940	1	1	
83	Binding Tube(185)	06-473780	1	1	
85	Reversing Valve	E5-101090	1	1	※
87	Service Valve(4/8)	E5-100040	1	1	※
89	Service Valve(Inch)	E5-101110	1	1	※
90	Spring For Sensor	05-840710	1	1	
91	Thermister As(Condensor Discharge)	46-922610	1	1	※
92	Binding Tube(185)	06-473780	1	1	
93	Pipe Cramp Rubber(Inch)	05-965940	3	3	
95	Electric Expansion Valve	E5-101130	1	1	※
96	Strainer	E5-100220	1	1	※
97	Binding Tube(185)	06-473780	3	3	
98	Heat Isulation Tube(13)	05-975210	1	1	
99	Hexagonal Screw 5TS12 With Flange	38-195430	1	1	
100	Dryer Holder	E2-100050	1	1	
101	Dryer	E5-101100	1	1	※
102	Dryer Stay	E2-100220	1	1	
103	Hexagonal Screw 5TS12 With Flange	38-195430	4	4	
104	Electrical Magnetic Valve(Liquid)	E5-100230	1	1	※
104	Electrical Magnetic Valve Coil	06-854110	1	1	※
104	4Screw6	38-714010	2	2	
105	JP Capillary Tube(Liquid)	E5-105380	1	1	
106	Electrical Magnetic Valve(Gas)	E5-100230	1	1	※
106	Electrical Magnetic Valve Coil	06-835730	1	1	※
106	4Screw6	38-714010	2	2	
108	JP Capillary Tube(Gas)	E5-101620	1	1	※
108	High Pressure Switch	E5-101050	1	1	※
109	Check Joint(RIS)	E5-100310	1	1	
110	Binding Tube(185)	06-473780	1	1	
111	Pipe Cramp Rubber(7/8)	05-963840	1	1	
112	Strainer	E5-105340	1	1	※
113	Check Joint(RIS)	E5-101070	1	1	※
113	Check Joint Stay	E2-100660	1	1	
113	4Screw10	38-114210	1	1	
117	Check Joint(RIS)	E5-100310	1	1	
118	Check Joint(RIS)	E5-100310	1	1	
120	Hexagonal Screw 5TS12 With Flange	38-195430	3	3	
121	Pan Head 5Screw10	38-755250	1	1	
122	Thermister Band	05-801850	1	1	
123	5 Nut	38-815050	1	1	
124	Thermister As(Fixed Speed Discharge)	46-941100	1	1	※
125	Pan Head 5Screw10	38-755250	1	1	
126	Thermister Band	05-801850	1	1	
127	Thermister As(Inverter Discharge)	46-941110	1	1	※
128	5 Nut	38-815050	1	1	
129	Hexagonal Screw 5TS16 With Flange	38-195440	2	2	
130	Hexagonal Screw 5TS16 With Flange	38-195440	2	2	
131	Reciever Tank	E5-101160	1	1	※
132	Hexagonal Screw 5TS12 With Flange	38-194120	2	2	
133	Accumulator	E5-105060	1	1	※
134	Hexagonal Screw 5TS12 With Flange	38-194120	4	4	
135	Compressor(Fixed Speed)	E5-105080	1	—	※
135	Compressor(Fixed Speed)	E5-105090	—	1	※
136	Hexagonal Bolt 6TS8	08-406210	4	4	
137	Compressor Mount Rubber	E5-105100	6	6	
138	Flat Washer	E5-105120	6	6	
139	Sleeve	E5-105110	6	6	
139	Hexagonal Screw 5TS12 With Flange	38-195430	2	2	
140	Oil Separator	E5-100370	2	2	
140	Oil Separator Cover	05-821970	2	2	
142	Strainer	E5-100380	2	2	※
143	Pipe Cramp Rubber(6/8)	05-968060	2	2	
144	Binding Tube(185)	06-473780	2	2	

13.REPLACEMENT PARTS<OUTDOOR UNIT>

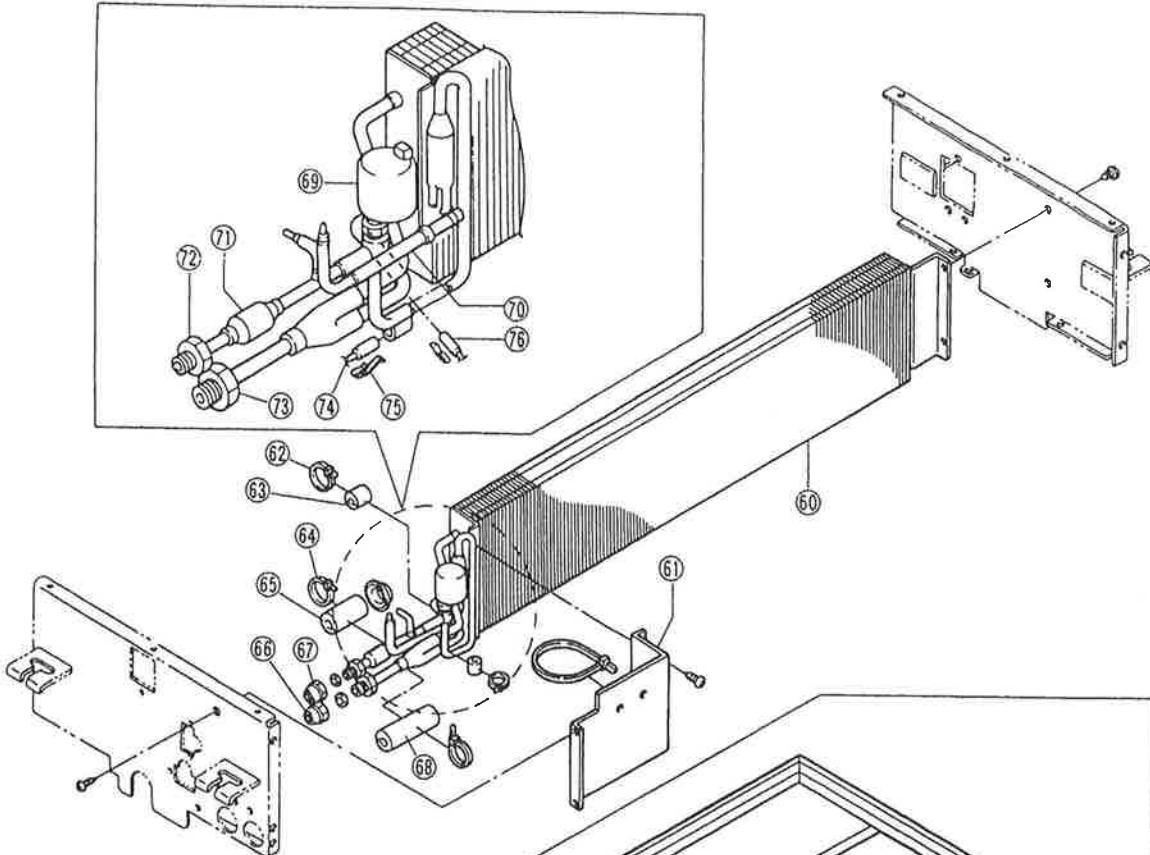
REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			P224MX1XP	P280MX1XP	
145	Hexagonal Nut 6TS6 With Flat washer	08-405360	4	4	
146	Compressor(Inverter)	E5-105070	1	1	※
147	Crank Case Heater	06-855420	2	1	※
	Standard Bushing	02-865010	1	1	
	Control Printed Circuit Board	E6-100200	1	1	※
161	Control box R	46-940940	1	1	
162	Capacitor for fan	06-845650	2	2	※
162	Sheet of capaciter	06-844750	2	2	
163	Reactor As	06-857510	1	1	
164	Inverter P.C.board	E6-100210 (100200)	1	1	
164	Locking guard spacer	06-851760	2	2	
164	Collar	06-855750	1	1	
164	Bush	06-855760	1	1	
165	Heat-sink	06-857550	1	1	
166	Power transister	06-857560	1	1	
164	Bush	06-857760	1	1	※
165	Heat-sink	06-857550	1	1	
166	Power transister	06-857650	1	1	※
167	Snubber capacitor As(0.47uF)	46-940950	1	1	※
168	Varistor As	46-941190	1	1	※
169	Snubber capacitor As(0.22uF)	46-940960	1	1	※
170	Current Sensor	06-851250	1	1	
171	Bridge diodo	06-857650	1	1	
172	Wire comp(INV)As.	F6-000720	1	1	
173	Thermal guard SW80	06-833310	1	1	
174	Resistance for reducing rush current	06-857520	1	1	※
175	Compresor rely	E6-100410	1	1	※
178	Relay	06-846910	1	1	
179	Fuse 250V 6.3A	(cb) → 70-850790	1	1	
179	Fuse holder	06-854190	1	1	
179	Sheet of fuse holder	06-854810	1	1	
180	Power supply P.C.Board	06-857600	1	1	※
180	Locking support board	06-449950	4	4	
181	Resistance for sensing over current	06-851510	1	1	
190	Control box L	46-940990	1	1	
191	Absorber P.C.Board	06-857630	1	1	※
191	Licking support board	06-449950	1	1	
192	Potential relay	06-811210	1	1	
193	Current detector for Fixed speed Comp.	(cb) → 70-837840	1	1	
193	Locking support board	06-449950	1	1	
194	Fuse 250V 6.3A	(cb) → 70-850790	1	1	
194	Fuse holder	06-854190	1	1	
194	Sheet fuse holder	06-854810	1	1	
195	Current detector for inverter comp.	(cb) → 70-837840	1	1	※
195	Locking support board	06-449950	4	4	
196	Terminal board(2P)	06-818970	2	2	
198	Line Filter	06-857640	1	1	
199	Terminal board(8P)	06-844260	1	1	
200	Transformer As	46-941180	1	2	※
201	Running Capacitor	06-844190	2	2	※
202	Control P.C. Board	E6-100210	1	1	*
177	Pressure Sensor (35kPa/cm²)	E5-100730	1	1	*
176	Pressure Sensor (10kPa/cm²)	E5-100740	1	1	*
197	Compressor Relay	E6-100400	1	1	*

2.ONE WAY CASSETTE TYPE UNIT

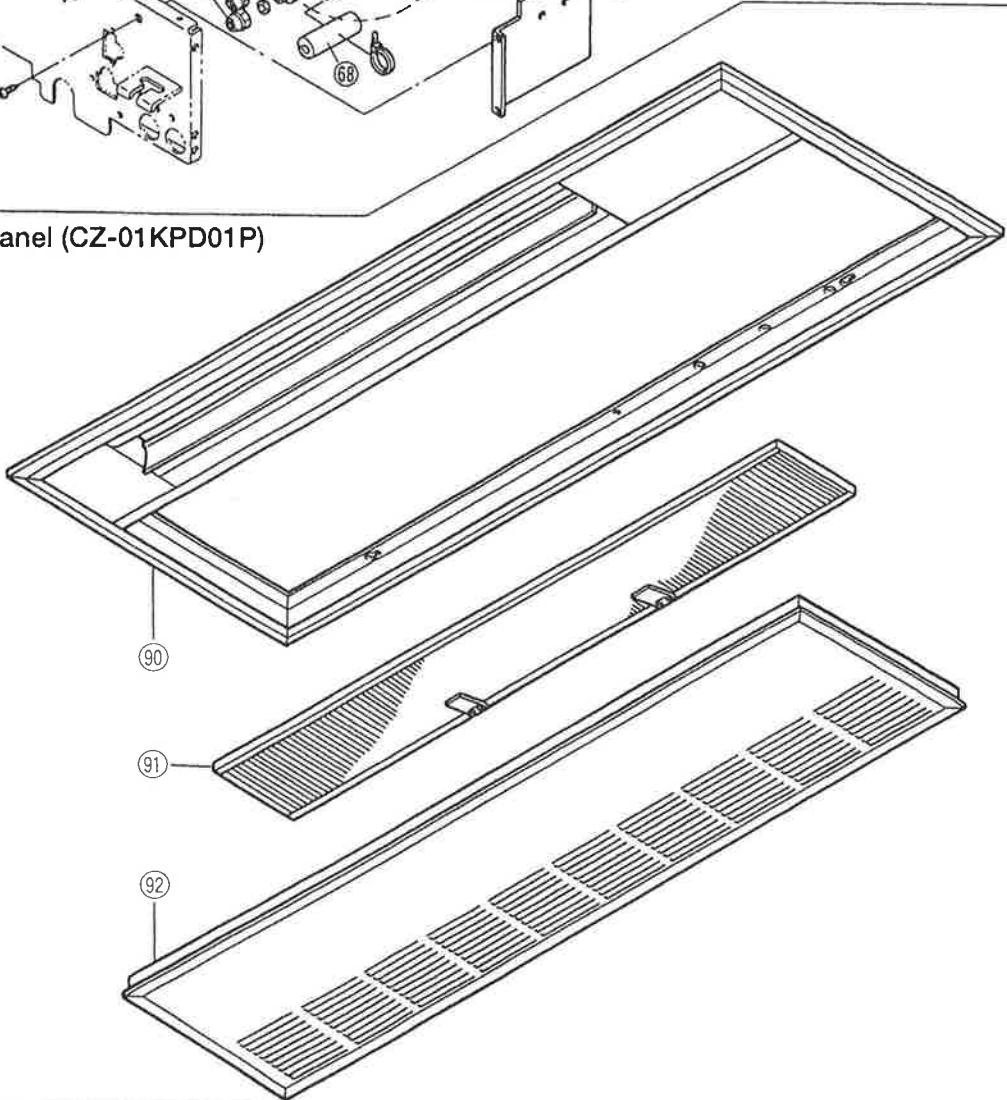
■CS-P28DM1HP



■CS-P28DM1HP



■Panel (CZ-01KPD01P)



14.REPLACEMENT PARTS<INDOOR UNIT>

CS-P28DMIHP

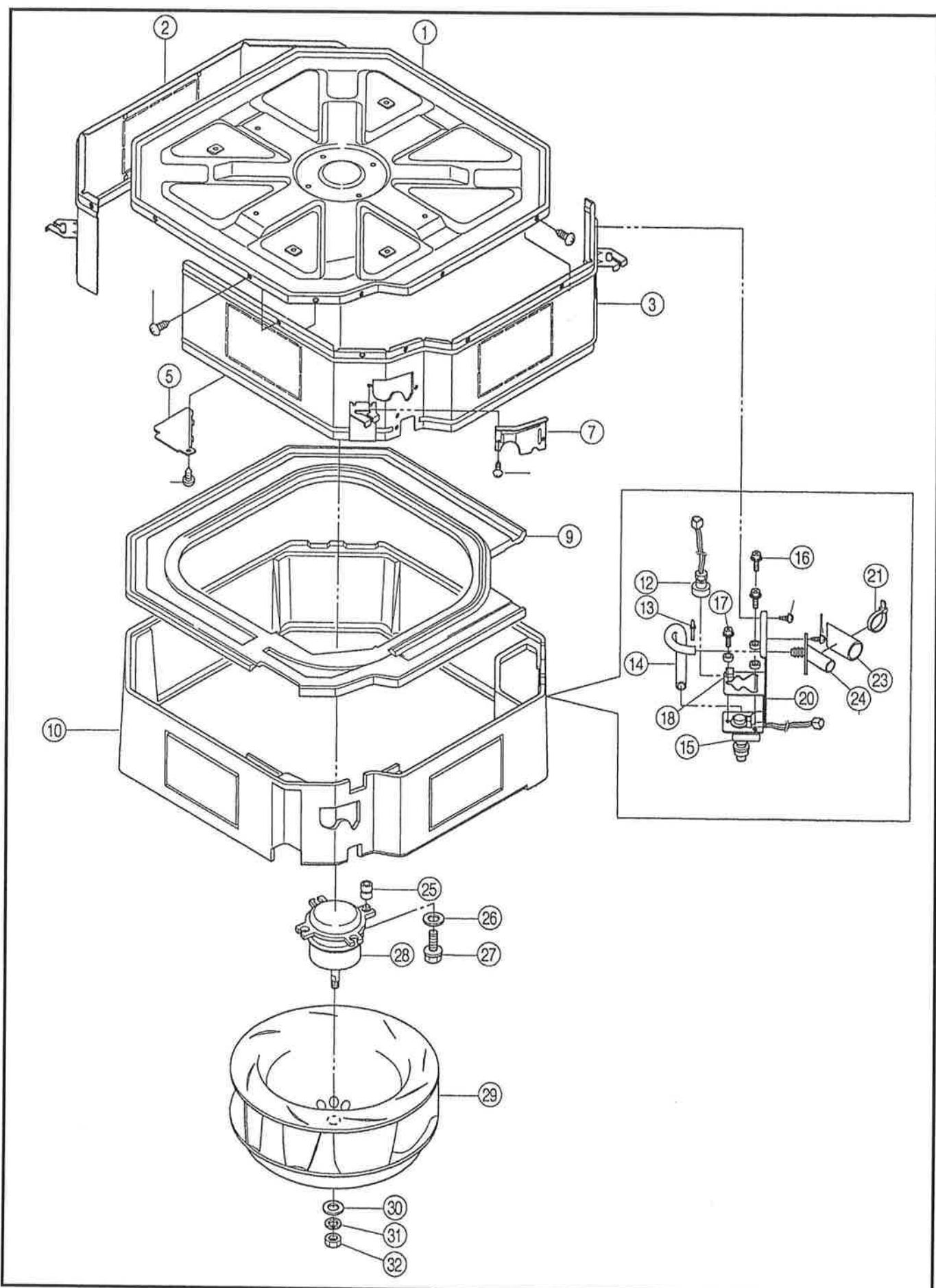
REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			P28DM1HP		
1	Cabinet As	42-561220	1		
2	Motor holder	05-849480	1		
3	Electrical	06-828170	1		
4	Screw 4TS8	38-114110	1		
5	Float switch As	46-848140	1		※
5	Float switch	06-828110	1		※
5	Cover float switch	06-813380	1		
7	Screw 4TS8	38-114110	1		
8	Air guider	02-866230	1		
9	Canuu clip	08-405140	1		
10	Screw 4TS8	38-114110	7		
11	Bearing holder	02-866340	1		
12	Bearing	05-803270	1		
13	Cabinet side As(R)	42-561180	1		
14	Cross flow fan	06-843670	1		※
15	Fan motor	06-843660	1		※
16	Motor crammer	05-838330	2		※
17	Screw 4TS8	38-114110	4		
18	Tube drain	02-882370	1		※
19	Lead pipe drain	02-498640	1		
20	Drain pump As	46-938930	1		※
20	Drain pump	06-856480	1		
21	Drain filter	02-498620	1		
22	Cabinet side As(L)	42-561190	1		
23	Screw 4TS8	38-114210	7		
24	Pipe holder	05-980970	2		
25	Screw 4TS8	38-114110	4		
26	Code cramp 105	06-821190	3		
28	Rubber bush(29)	39-251070	2		
29	Drain cap	45-533160	1		
30	Cap lead pipe	05-955980	1		
31	Drain pan	45-589260	1		※
32	Drain pan stay As	42-561200	8		
33	Screw 4TS8	38-114110	8		
34	Shell support stay	02-866810	1		
36	P.C.box As	F6-001240	1		
37	Thermistor(Room temp.)	E6-100440	1		
37	Tube banding 94	39-220010	1		
38	Transformer	E6-100240	1		※
46	Pan head screw 3TS6	38-152010	2		
47	Electrical noise filter	E6-100420	1		
49	Pan head screw 4TS14	38-154410	2		
51	Terminal(10P)	06-838860	1		
52	Printed circuit board A	F6-001190	1		
52	Printed circuit board B	06-858060	1		※
54	P.C.bush	06-817930	1		
55	P.C.collar	06-835140	1		
56	Rocking guard spacer 8	06-805290	1		
57	Code cramp 105	06-821190	2		
58	Cover P.C.box	06-843750	1		
60	Evaporator	E5-105560	1		
61	Evaporator Stay	05-849530	1		
62	Tube banding 154	39-220030	1		
63	Pipe cramp rubber	05-959720	1		
64	Tube banding 197	39-220030	1		
65	Heat insulation tube(10)	05-825960	1		
66	Flare nut(4/8)	E5-100090	1		
67	Flare nut(3/8)	E5-100710	1		
68	Heat insulation tube(10)	05-825960	1		
69	Electrical expansion valve	E5-105710	1		※
70	Check valve(2/8)	E5-105630	1		
71	Strainer	E5-100530	1		※
72	Union(3/8)	E5-100540	1		
73	Union(4/8)	E5-100490	1		
74	Thermister As(Liquid pipe inlet)	46-942930	1		※
75	Spring for sensor	05-840710	1		
76	Thermister As(Liquid pipe outlet)	46-942940	1		※

Optional accessory part(D corated panel CZ-01KPD01P)

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			1		
90	Grille outer As	70-414200	1		
91	Filter	70-414210	1		
92	Inlet grillep	70-414480	1		
	Hexagonal 5S30	08-405340			

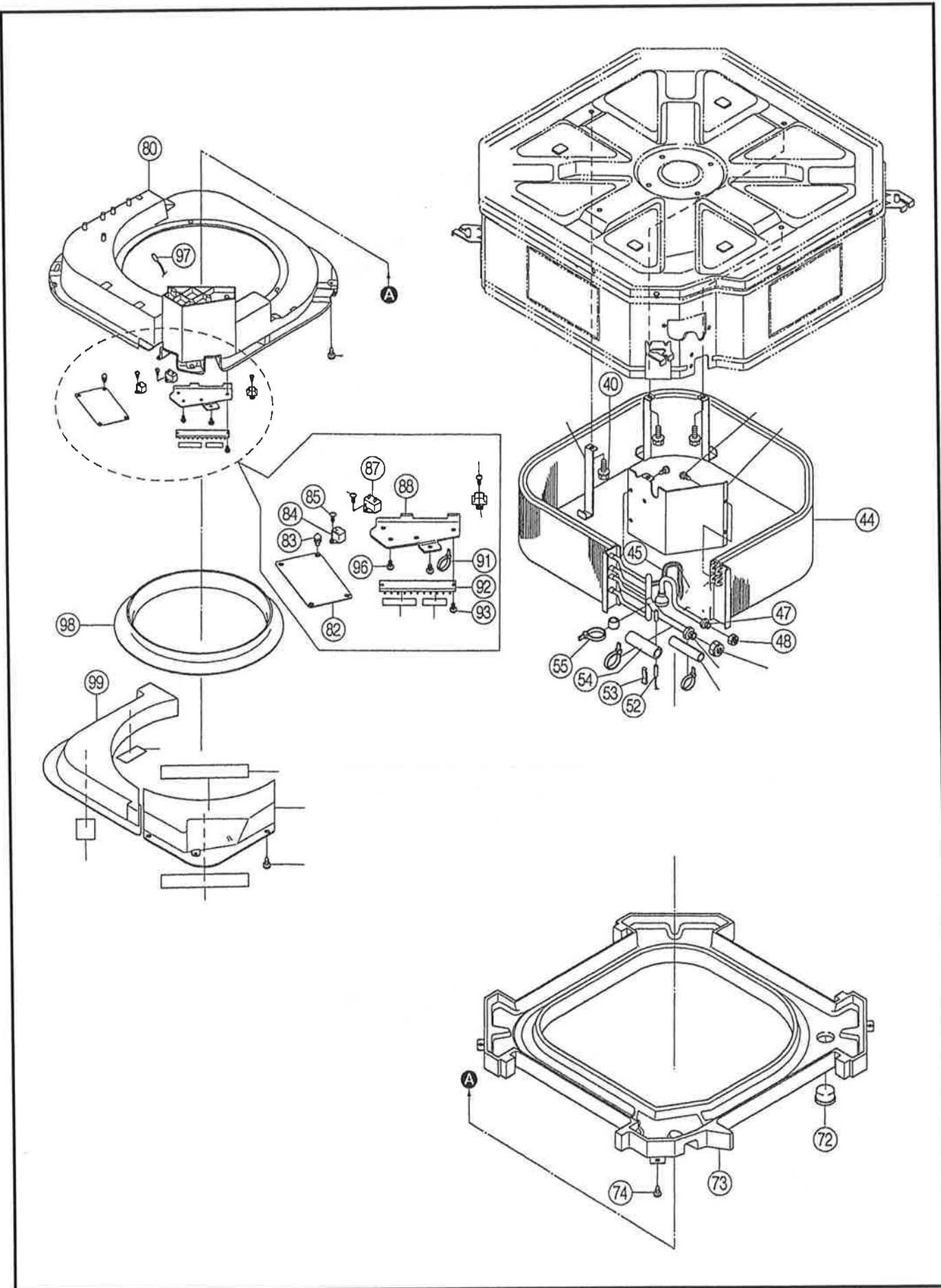
■CS-P36UM1HP~P140UM1HP

CS-P80UM1HP



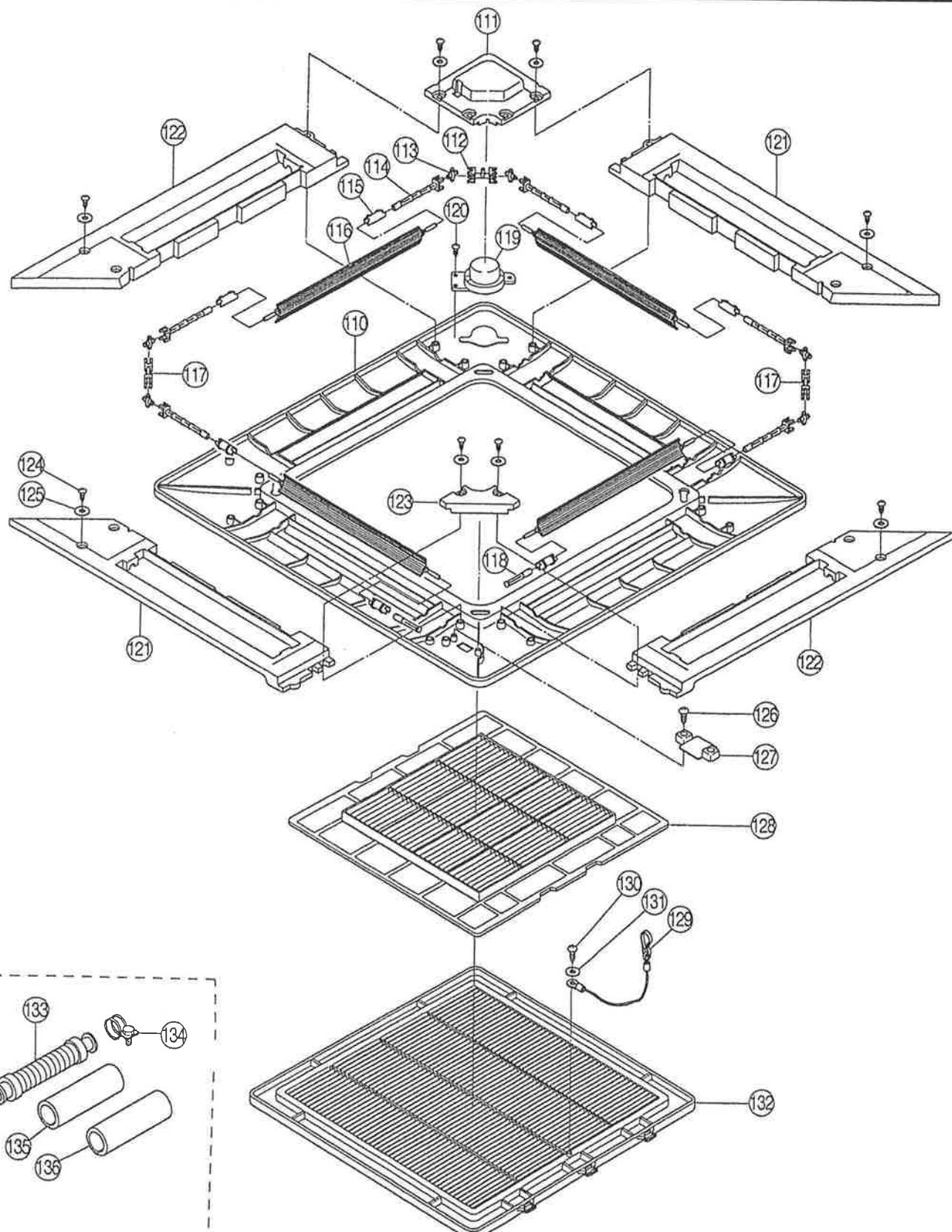
■CS-P36UM1HP~CS-P140UM1HP

CS-P80UM1HP



■CS-P36UM1HP~CS-P140UM1HP

CZ-06KPU1VP



14.REPLACEMENT PARTS<INDOOR UNIT>

CS-P36UM1HP,CS-P45UM1HP,CS-P56UM1HP

CS-P71UM1HP,CS-P80UM1HP,CS-P112UM1HP,CS-P140UM1HP

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT							※REC PARTS
			P36UM1HP	P45UM1HP	P56UM1HP	P71UM1HP	P80UM1HP	P112UM1HP	P140UM1HP	
1	Shell As	42-576540	1	1	1	1	1	1	1	
2	Shell Side B As	42-575540	1	1	1	1	1	—	—	
		42-575550	—	—	—	—	—	1	1	
3	Shell Side F As	42-575520	1	1	1	1	1	—	—	
		42-575530	—	—	—	—	—	1	1	
4	Screw 4TS8	38-114110	11	11	11	11	11	11	11	
5	Code Holder	02-882430	1	1	1	1	1	1	1	
6	Screw 4TS8	38-114110	1	1	1	1	1	1	1	
7	Pipe Cover As	45-911390	1	1	1	1	1	1	1	
9	Inner Polystyrene Top	02-882340	1	1	1	1	1	—	—	
		02-882350	—	—	—	—	—	1	1	
10	Inner Polystyrene Side	42-576770	1	1	1	1	1	—	—	
		42-576780	—	—	—	—	—	—	—	
11	Drain Pump As	F6-000430	1	1	1	1	1	1	1	※
12	Float Switch As	06-828110	1	1	1	1	1	1	1	
13	Tube binding 94	39-220010	1	1	1	1	1	1	1	
14	Tube drain	02-869170	1	1	1	1	1	1	1	※
15	Drain pump	06-846350	1	1	1	1	1	1	1	※
16	Plus Hexagonal screw 5TS27	38-193610	3	3	3	3	3	3	3	
17	6Wsher	38-490120	3	3	3	3	3	3	3	
18	Mount Rubber	06-487720	3	3	3	3	3	3	3	
19	Screw 4TS8	38-114110	4	4	4	4	4	4	4	
20	Panel Drain As	46-939280	1	1	1	1	1	—	—	
		46-939290	—	—	—	—	—	1	1	
21	Tube binding 154	39-220030	3	3	3	3	3	3	3	
22	Screw 4TS8	38-114110	4	4	4	—	—	—	—	
23	Heat Insulation Tube(16)	02-869190	1	1	1	1	1	1	1	
24	Lead Pipe Drain	06-845510	1	1	1	1	1	1	1	
25	Mount Fan Motor	06-856730	4	4	4	4	4	4	4	
26	8Washer	38-417010	4	4	4	4	4	4	4	
27	Plus Hexagonal screw 5TS45	08-406250	4	4	4	4	4	4	4	
28	Fan Motor	06-856610	1	1	1	—	—	—	—	※
		E6-100100	—	—	—	1	1	—	—	※
		06-856620	—	—	—	—	—	1	—	※
		E6-100120	—	—	—	—	—	—	1	※
29	Turbo Fan	05-869130	1	1	1	—	—	—	—	※
		05-869120	—	—	—	1	1	1	1	※
30	8 Washer	08-406060	1	1	1	1	1	1	1	
31	8SP Washer	38-427080	1	1	1	1	1	1	1	
32	8 Nut	38-817010	1	1	1	1	1	1	1	
40	Hezagonal screw 4TS8 with Flange	38-191710	4	4	4	4	4	4	4	
41	Evaporator Holder	05-869480	3	3	—	—	—	—	—	
		05-869490	—	—	3	3	3	—	—	
		05-869500	—	—	—	—	—	3	—	
		05-869510	—	—	—	—	—	—	3	
42	Eva Center Plate	05-869460	1	1	1	1	1	—	—	
		05-869470	—	—	—	—	—	1	1	
44	Evaporater As	E5-105770	1	1	—	—	—	—	—	※
		E5-105780	—	—	1	1	1	—	—	※
		E5-105790	—	—	—	—	—	1	—	※
		E5-105800	—	—	—	—	—	—	1	※
45	Distributer As	F5-002820	1	1	—	—	—	—	—	※
		F5-002830	—	—	1	1	1	—	—	※
		F5-002840	—	—	—	—	—	1	—	※
		F5-002850	—	—	—	—	—	—	1	※
		Distributer	E5-105640	1	1	—	—	—	—	※
		E5-104560	—	—	1	1	1	—	—	※
		E5-105650	—	—	—	—	—	1	—	※
		E5-105660	—	—	—	—	—	—	1	※
47	Capillary tube	E5-105690	4	4	2	2	2	8	6	※
		E5-105700	—	—	4	4	4	—	—	※
		E5-100540	1	1	1	1	1	1	1	
		E5-100490	1	1	—	—	—	—	—	
48	Union(3/8)	E5-100500	—	—	1	1	1	—	—	
		E5-100810	—	—	—	—	—	1	1	
		E5-100710	—	—	—	1	1	1	1	
		E5-100090	1	1	—	—	—	—	—	
48	Flare Nut(3/8)	E5-100720	—	—	1	1	1	—	—	
		E5-100080	—	—	—	—	—	1	1	
		E5-105710	1	1	—	—	—	—	—	※
		E5-105720	—	—	1	1	1	—	—	※
52	Coil Sensor	E5-105750	—	—	—	—	—	—	—	※
		E5-105760	—	—	—	—	—	—	1	※
		06-826390	1	1	1	1	1	1	1	
		05-961750	1	1	—	—	—	—	—	
		05-403040	—	—	1	1	1	—	—	
		05-412690	—	—	—	—	—	1	1	
52	Electric Expansion Valve	E5-105710	1	1	—	—	—	—	—	※
		E5-105720	—	—	1	1	1	—	—	※
		E5-105750	—	—	—	—	—	1	—	※
		E5-105760	—	—	—	—	—	—	1	※

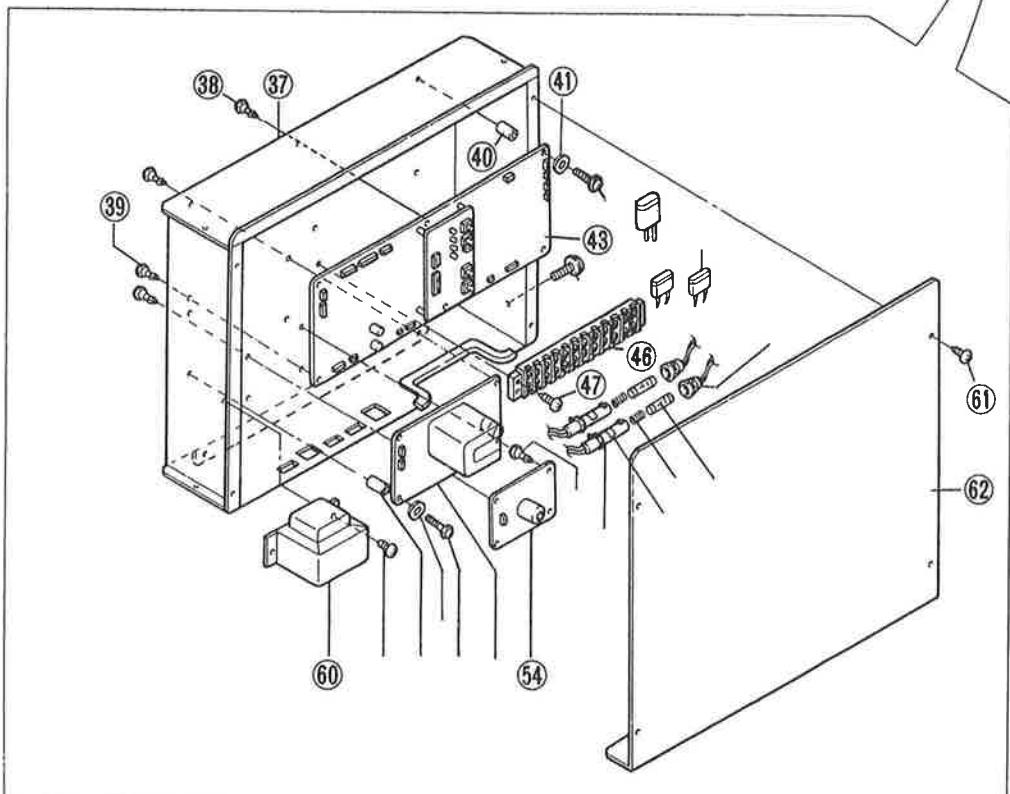
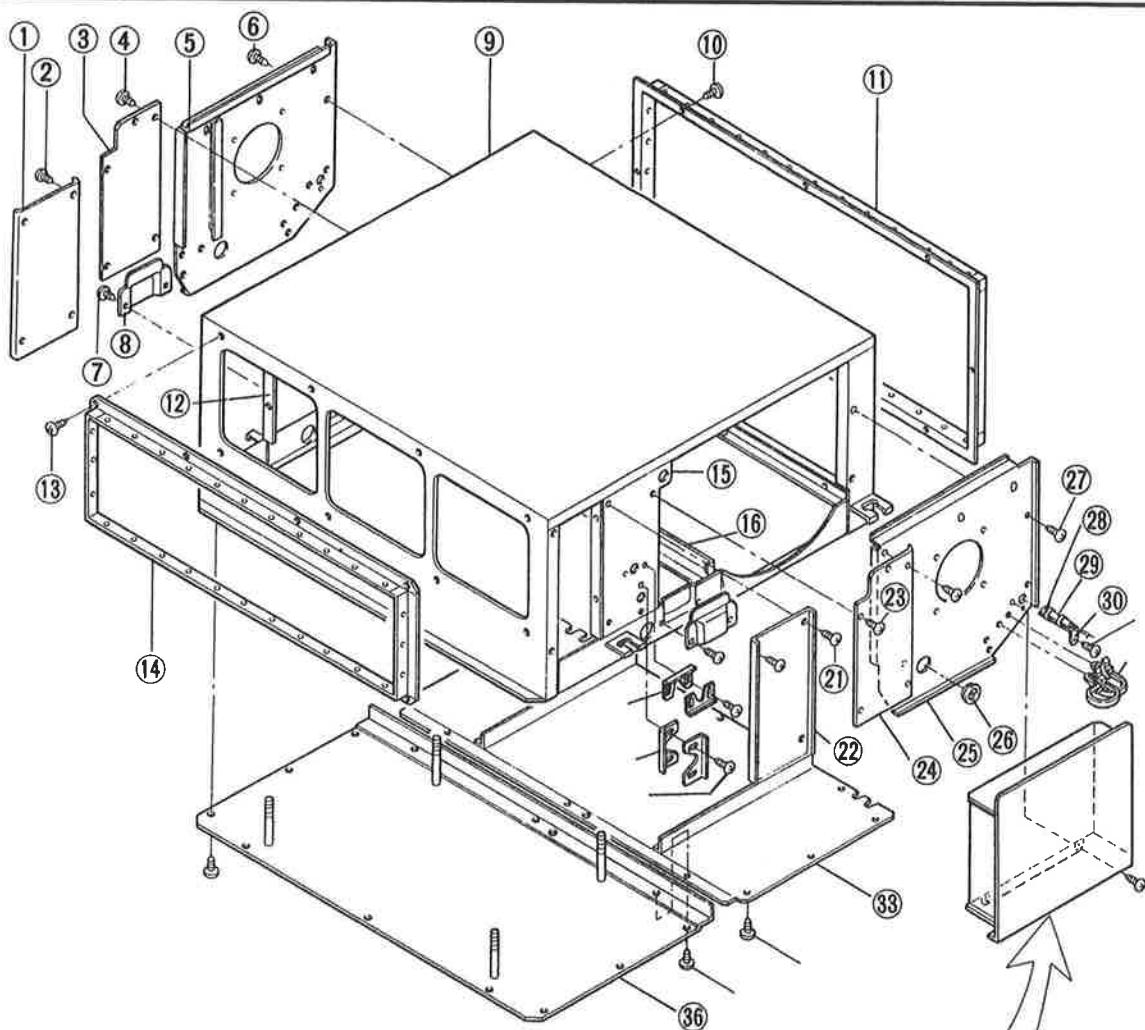
14. REPLACEMENT PARTS<INDOOR UNIT>

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT							※ REC PARTS
			P36UM1HP	P45UM1HP	P56UM1HP	P71UM1HP	P80UM1HP	P112UM1HP	P140UM1HP	
53	Sensor Spring	05-840710	2	2	2	2	2	2	2	
54	Heat Insulation Tube(16)	05-844380	1	1	1	1	1	1	1	
55	Tube Binding	39-220010	2	2	2	2	2	2	2	
72	Drain Seal Cap	05-811470	1	1	1	1	1	1	1	
73	Drain Pan As	45-914770	1	1	1	1	—	—	—	*
		45-914700	—	—	—	—	1	—	—	*
		45-914710	—	—	—	—	—	1	1	*
80	Relay Box As	06-856530	1	1	1	1	1	1	1	
81	Screw 4TS8	38-114110	2	2	2	2	2	2	2	
82	Printed Circuit Board A	F6-000970	1	—	—	—	—	—	—	*
		F6-000980	—	1	—	—	—	—	—	*
		F6-000990	—	—	1	—	—	—	—	*
		F6-001000	—	—	—	1	—	—	—	*
		F6-001010	—	—	—	—	1	—	—	*
		F6-001020	—	—	—	—	—	1	—	*
		F6-001030	—	—	—	—	—	—	1	*
	Printed Circuit Board B	06-858060	1	1	1	1	1	1	1	
83	Looking Cart Space 48	06-835200	2	2	2	2	2	2	2	
84	P・C・B Bush	06-817930	2	2	2	2	2	2	2	
85	Pan Head Screw 3TS8	38-152110	2	2	2	2	2	2	2	
	P・C・B Collar	06-835140	2	2	2	2	2	2	2	
87	Screw 4TS12	38-114310	1	1	1	—	—	—	—	
	Transformer As	E6-100230	1	1	1	1	1	1	1	*
88	Terminal plate As	F6-000490	1	1	1	1	1	1	1	
89	Screw 4TS8	38-154110	2	2	2	—	—	—	—	
91	Cable Strap 1775	06-818980	1	1	1	1	1	1	1	
92	Terminal plate As	06-838550	1	1	1	1	1	1	1	
93	Screw 4TS14	38-154410	2	2	2	2	2	2	2	
97	Room Thermister	E6-100430	1	1	1	1	1	1	1	*
98	Orifice Ring	05-869250	1	1	1	—	—	—	—	
		05-869260	—	—	—	1	1	—	—	
		05-869270	—	—	—	—	—	—	—	
99	Cover Relay Box	06-856540	1	1	1	1	1	1	1	
	Strainer	E5-105670	2	2	2	2	2	—	—	*
		E6-105680	—	—	—	—	—	2	2	*
	Thermister As B	46-838600	1	1	1	1	1	1	1	*
	Noise Filter	E6-100420	1	1	1	1	1	1	1	*
	Running Capacitor	06-828170	1	1	1	—	—	—	—	*
		06-835450	—	—	—	1	—	—	—	*
		06-831080	—	—	—	—	1	—	—	*
		06-833940	—	—	—	—	—	1	—	*
		06-833100	—	—	—	—	—	—	1	*

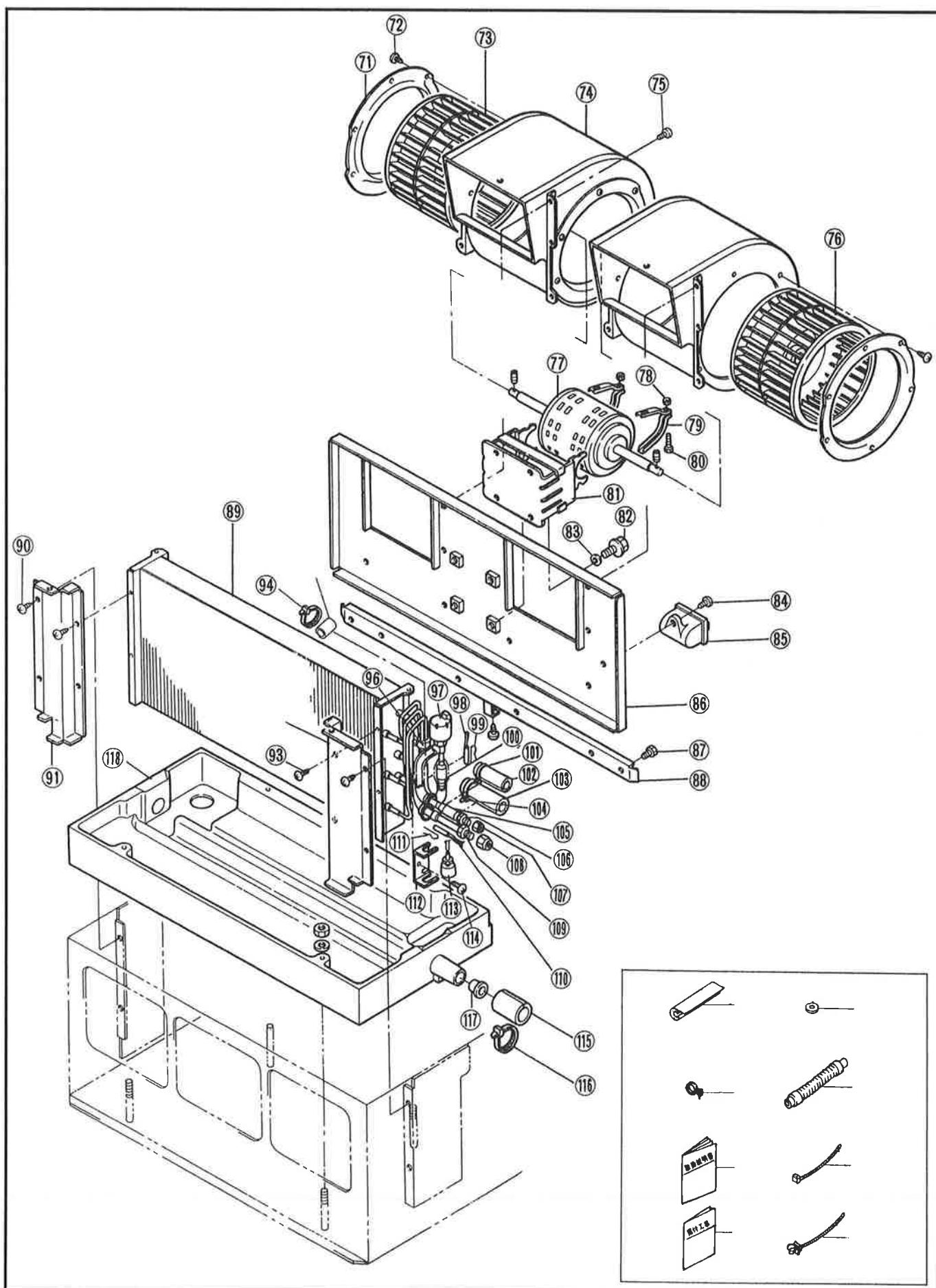
14.REPLACEMENT PARTS<INDOOR UNIT>

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			CZ-06KPU1VP		
110	Grill Outer	03-423450	1		
111	Heat Insulation Polystyrene(C)	03-423560	1		
112	Joint Arm(A)	03-423480	1		
113	Joint	03-423520	6		
114	Joint Arm(C)	03-423500	6		
115	Joint Support	03-423530	8		
116	Louver	03-423460	4		※
117	Joint Arm(B)	03-423490	2		
118	Joint Arm(D)	03-423510	2		
119	Louver Motor	E6-100140	1		※
120	Hexagonal screw 5 TS with Flange	38-114210	2		※
121	Heat Insulation Polystyrene(A)	03-423540	2		
122	Heat Insulation Polystyrene(B)	03-423550	2		
123	Heat Insulation Polystyrene(D)	03-423570	1		
124	Hexagonal screw 5 TS with Flange	38-114210	16		
125	5 Flat Washer	38-490110	16		
126	Hexagonal screw 5 TS with Flange	38-114110	2		
127	Hidden Plate	03-423470	1		
128	Long Life Filter	03-423600	1		※
129	Wire As	47-502100	2		
130	Hexagonal screw 5 TS with Flange	38-114210	2		
131	4 Flat Washer	38-490020	2		
132	Inlet Grill	03-423580	1		

14.REPLACEMENT PARTS<INDOOR UNIT>



■CS-P45EM1HP,CS-P80EM1HP
CS-P56EM1HP,CS-P71EM1HP



14.REPLACEMENT PARTS<INDOOR UNIT>

CS-P45EMIHP, CS-P56EMIHP
CS-P71EMIHP, CS-P80EMIHP

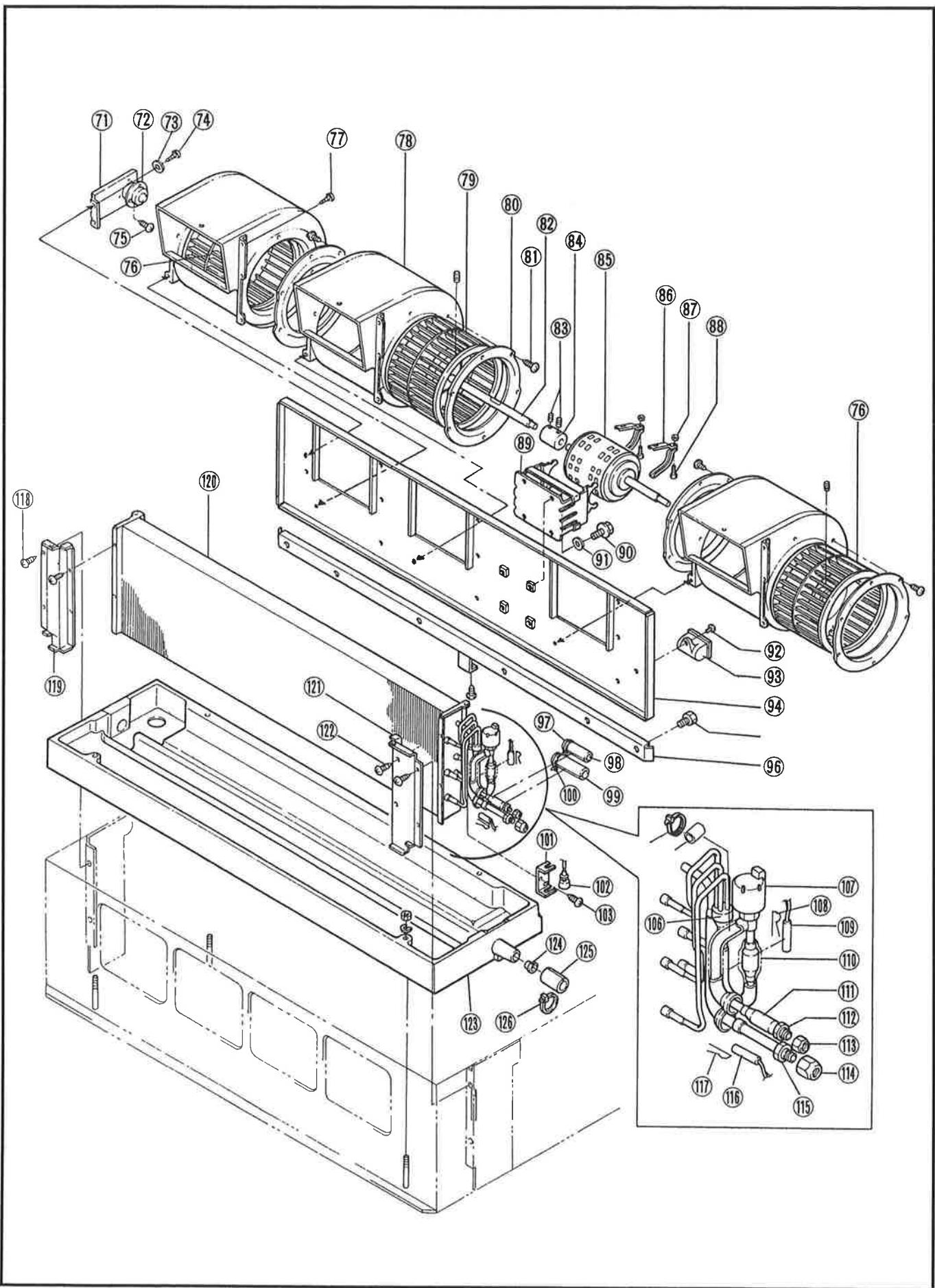
REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT				※REC PARTS
			P45EM1HP	P56EM1HP	P71EM1HP	P80EM1HP	
1	Service Panel Eva As	42-555720	1	1	1	1	
2	Screw 4TS8	38-114110	4	4	4	4	
3	Service Panel Center(R) As	42-555640	1	1	1	1	
4	Screw 4TS8	38-114110	5	5	5	5	
5	Cover Side(R) As	42-555630	1	1	1	1	
6	Screw 4TS8	38-114110	4	4	4	4	
7	Screw 4TS8	38-114110	4	4	4	4	
8	Code Cramp Stay	02-857080	2	2	2	2	
9	Shell As	42-555640	1	—	—	—	
		42-556220	—	1	1	1	
10	Screw 4TS8	38-114310	8	8	8	8	
11	Inlet Flange As	42-556720	1	—	—	—	
		42-555730	—	1	1	1	
12	Shell Side(R) As	42-556140	1	1	1	1	
		Rubber Bush(25)	39-250150	1	1	1	1
13	Screw 4TS12	38-114310	6	8	8	8	
14	Duct Flange As	42-554130	1	—	—	—	
		42-554140	—	1	1	1	
15	Shell Side(L) As	42-556120	1	1	1	1	
		Code Cramp	06-810380	2	2	2	2
16	Rail Fan Base Bottom	02-857880	1	—	—	—	
		02-856000	—	1	1	1	
21	Screw 4TS8	38-114110	4	4	4	4	
22	Service Panel Eva As	42-555720	1	1	1	1	
23	Screw 4TS8	38-114110	5	5	5	5	
24	Service Panel Center(L) As	42-555700	1	1	1	1	
25	Cover Side(L) As	42-555690	1	1	1	1	
26	Rubber Bush(25)	39-251050	1	1	1	1	
		Rubber Bush(34)	08-494770	1	1	1	1
27	Screw 4TS8	38-114110	4	4	4	4	
28	Binding Tube(94)	39-220010	1	1	1	1	
29	Thermister(Room Temp)	06-858530	1	1	1	1	※
30	Sensor Holder	06-835830	1	1	1	1	
33	Shell Bottom As	42-556700	1	—	—	—	
		42-555670	—	1	1	1	
36	Panel Drain Pan As	42-556680	1	1	1	1	
37	Relay Box As	F6-001200	1	1	1	1	
38	Card Spacer	06-839480	1	1	1	1	
39	Locking Guard Spacer(B)	06-805290	4	4	4	4	
40	P・C・B Collar	06-835140	1	1	1	1	
41	P・C・B Bush	06-817930	1	1	1	1	
43	Printed Circuit Board A	F6-001080	1	—	—	—	※
		F6-001090	—	1	—	—	※
		F6-001100	—	—	1	—	※
		F6-001110	—	—	—	1	※
		06-858060	1	1	1	1	
46	Terminal Board(12P)	06-838480	1	1	1	1	
		E7-101340	1	1	1	1	
47	Screw 4TS12	38-154410	2	2	2	2	
54	Noise Filter	E6-100420	1	1	1	1	※
60	Transformer	E6-100240	1	1	1	1	※
61	Screw 4TS8	38-114110	4	4	4	4	
62	Cover Relay Box	06-836570	1	1	1	1	
71	Inlet Ring	05-837180	2	4	4	4	
72	Screw 4TS8	38-114110	12	24	24	24	
73	Impeller(R)	05-837190	1	1	1	1	※
74	Casing As	45-580310	1	2	2	2	
75	Screw 4TS8	38-114110	6	12	12	12	
76	Impeller(L)	05-837200	—	1	1	1	※
77	Fanmotor	06-854530	1	—	—	—	※
		06-854540	—	1	—	—	※
		06-854560	—	—	1	1	※
78	Nut 4	08-405710	2	2	2	2	
79	Fanmotor Installing Plate	05-837360	4	4	4	4	
80	Hexagonal 8 Bolt 14 with Flange	08-405630	2	2	2	2	
81	Fanmotor Installing Stay	05-837370	1	1	1	1	
82	Hexagonal 8 Bolt 14	38-990980	4	4	4	4	
83	8 Washer	38-490400	4	4	4	4	
84	Screw 4TS8	38-114110	1	1	1	1	
		06-834100	1	—	—	—	

14.REPLACEMENT PARTS<INDOOR UNIT>

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT				※REC PARTS
			P45EM1HP	P56EM1HP	P71EM1HP	P80EM1HP	
85	Running Capacitor	06-833940	—	1	—	—	*
		06-495460	—	—	1	—	*
		06-833670	—	—	—	1	*
86	Fan Base As	45-581690	1	—	—	—	
		45-580300	—	1	1	1	
88	Stay Guider Fan Base As	02-858040	1	—	—	—	
		42-557980	—	1	1	1	
89	Evaporator As	F5-001220	1	—	—	—	
		F5-001230	—	1	—	—	
		F5-001240	—	—	1	—	
		F5-002590	—	—	—	1	
91	Seal Panel Eva(R) As	42-556310	—	1	1	1	
93	Seal Panel Eva(L) As	42-556320	—	1	1	1	
94	Binding Tube(197)	39-220050	—	1	1	1	
96	Distributor As	F5-001340	1	1	1	—	*
		F5-001350	—	—	—	1	*
		E5-102560	1	1	1	—	*
		E5-102570	—	—	—	1	*
97	Electric Expansion Valve	E5-101010	1	—	—	—	*
		E5-101020	—	1	1	—	*
		E5-100930	—	—	—	1	*
98	Thermister(Eva Inlet Pipe)	46-838600	1	1	1	1	*
99	Spring For Sensor	05-840710	1	1	1	1	*
100	Strainer	E5-102530	1	1	1	1	*
101	Binding Tube(197)	39-220050	1	1	1	1	
102	Heat Insulating Tube(16)	05-974380	1	1	1	1	
103	Heat Insulating Tube(16)	05-974380	1	1	1	—	
	Heat Insulating Tube(22)	05-970240	—	—	—	1	
104	Binding Tube(197)	39-220050	1	1	1	1	
105	Strainer	E5-102770	1	1	1	—	*
		E5-101670	—	—	—	1	*
106	Union(3/8)	E5-100540	1	1	1	1	
107	Flare Nut(3/8)	E5-100710	—	1	1	1	
		E5-100090	1	—	—	—	
108	Flare Nut(5/8)	E5-100720	1	1	1	1	
109	Union(5/8)	E5-100490	1	—	—	—	
		E5-100500	—	1	1	1	
110	Coil Sensor	06-826390	1	1	1	1	
111	Spring For Sensor	05-840710	1	1	1	1	
112	Stay Float Switch	02-857120	1	1	1	1	
113	Float Switch As	35-843490	1	1	1	1	
		Cover Float Switch	06-813380	1	1	1	
114	Screw 4TS8	38-114110	1	1	1	1	
115	Heat Insulating Tube(28)	05-816760	1	1	1	1	
116	Binding Tube(197)	39-220050	1	1	1	1	
117	Drain Cap	02-847090	1	1	1	1	
118	Drainpan As	45-581730	1	—	—	—	*
		45-580330	—	1	1	1	*

14.REPLACEMENT PARTS<INDOOR UNIT>

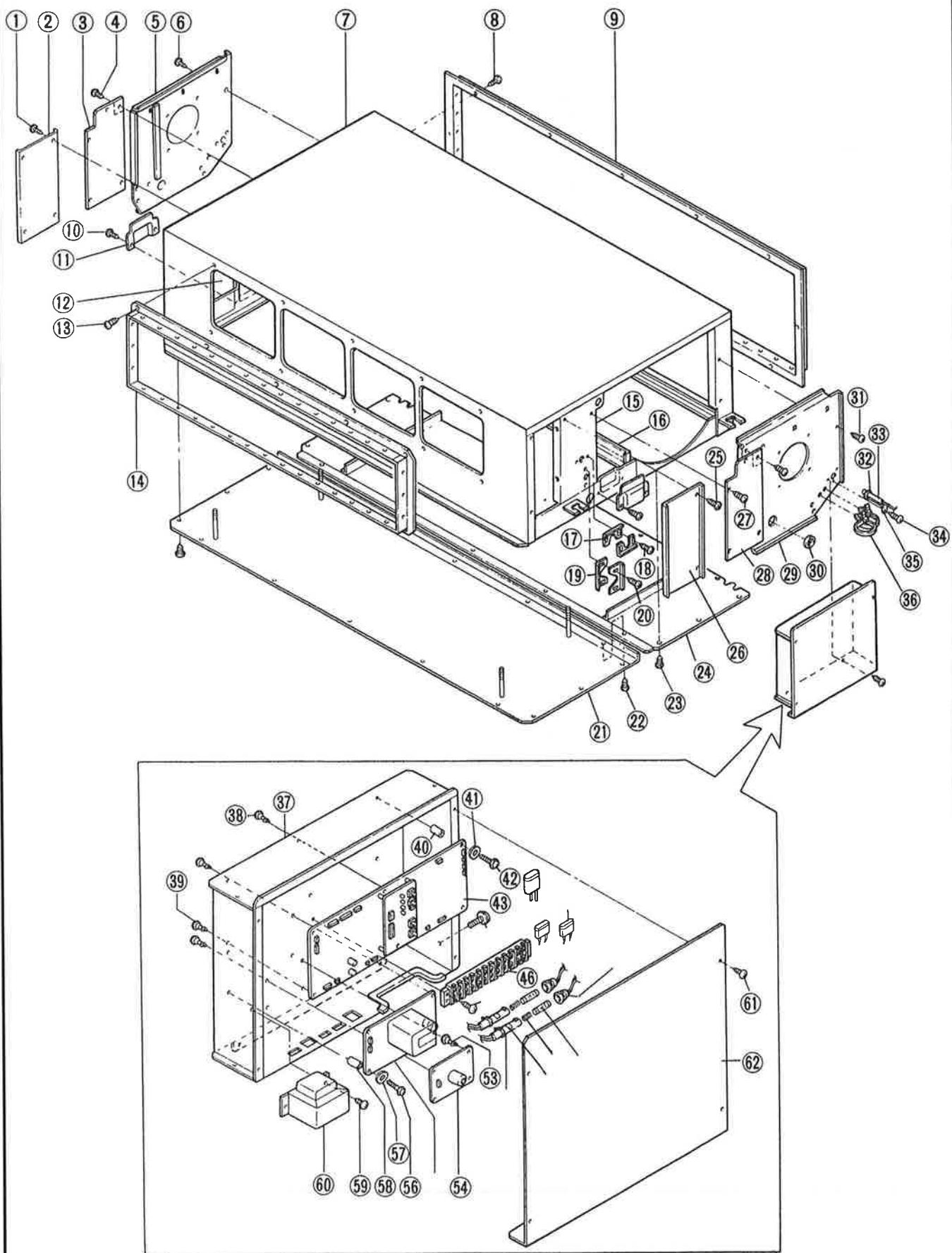
■CS-P45EM1HP,CS-P80EM1HP
CS-P56EM1HP,CS-P71EM1HP



14. REPLACEMENT PARTS<INDOOR UNIT>

■CS-112EM1HP,CS-P140EM1HP

CS-P112EM1HP



	14.REPLACEMENT PARTS<INDOOR UNIT>	
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CS-P112EM1HP
CS-P140EM1HP

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			P112EM1HP	P140EM1HP	
1	Screw 4TS8	38-114110	4	4	
2	Service Panel Eva As	42-555720	1	1	
3	Service Panel Center(R) As	42-555640	1	1	
4	Screw 4TS8	38-114110	5	5	
5	Cover Side(R) As	42-555630	1	1	
6	Screw 4TS8	38-114110	4	4	
7	Shell As	42-556650	1	1	
8	Screw 4TS12	38-114310	10	10	
9	Inlet Flange As	42-556730	1	1	
10	Screw 4TS8	38-114110	4	4	
11	Code Cramp Stay	02-857080	2	2	
12	Shell Side(R) As	42-556140	1	1	
12	Rubber Bush(25)	02-859790	1	1	
13	Screw 4TS12	38-114310	10	10	
14	Duct Flange As	42-554150	1	1	
15	Shell Side(L) As	42-556120	1	1	
15	Code Cramp	06-810380	2	2	
16	Rail Fan Base Bottom	02-857890	1	1	
17	Pipe Holder	05-980970	2	2	
18	Screw 4TS10	38-114210	2	2	
19	Pipe Holder	05-980980	2	2	
20	Screw 4TS10	38-114210	2	2	
21	Drain Panel Pan As	42-556690	1	1	
22	Screw 4TS8	38-114110	16	16	
23	Screw 4TS8	38-114110	11	11	
24	Shell Bottom As	42-556710	1	1	
25	Screw 4TS8	38-114110	1	1	
26	Service Panel Eva As	42-555720	4	4	
27	Screw 4TS8	38-114110	1	1	
28	Service Panel Center(L) As	42-555700	5	5	
29	Cover Side L As	42-555690	1	1	
30	Rubber Bush(25)	39-251050	1	1	
30	Rubber Bush(34)	08-404770	1	1	
31	Screw 4TS8	38-114110	1	1	
32	Binding Tube(94)	39-220010	4	4	
33	Thermister(Room Temp)	06-834420	1	1	
34	Screw 4TS8	38-114110	1	1	
35	Sensor Holder	06-835830	1	1	
36	Cable Strap(1775)	06-818980	1	1	
37	Relay Box As	F6-001200	2	2	
37	Relay Box As	F6-001200	1	—	
38	Card Spacer	06-839480	—	1	
39	Locking Card Spacer B	06-805290	1	1	
40	P・C・B Collar	06-835140	4	4	
41	P・C・B Bush	06-817930	1	1	
42	Pan Head Screw 3TS16	38-752510	1	1	
43	Printed Circuit Board A	F6-001120	1	1	
43	Printed Circuit Board A	F6-001130	1	—	※
43		06-858060	—	1	※
46	Terminal Board(12P)	06-838480	1	1	
46	Junction Number	E7-101340	1	1	
53	Locking Card Spacer B	06-805290	1	1	
54	Noise Filter	E6-100420	4	4	
56	Pan Head Screw 3TS16	38-152510	1	1	
57	P・C・B Bush	06-817930	4	4	
58	P・C・B Collar(75)	06-835140	4	4	
59	Screw 4TS6	38-114010	4	4	
60	Transformer	E6-100240	1	1	
61	Screw 4TS8	38-114110	1	1	
62	Cover Relay Box	06-836570	4	4	
71	Bearing Supporter	05-837900	1	1	
72	Bearing	05-399270	1	1	
73	8Washer	38-490400	1	1	
74	Hexagonal Screw 8TS14 with Flange	39-990980	2	2	
75	Screw 4TS8	38-114110	2	2	
76	Impeller(L)	05-838080	2	2	
77	Screw 4TS8	38-114110	2	2	
78	Casing As	45-580310	18	18	
79	Impeller(R)	05-838070	3	3	
80	Inlet Ring	05-837180	1	1	
			6	6	

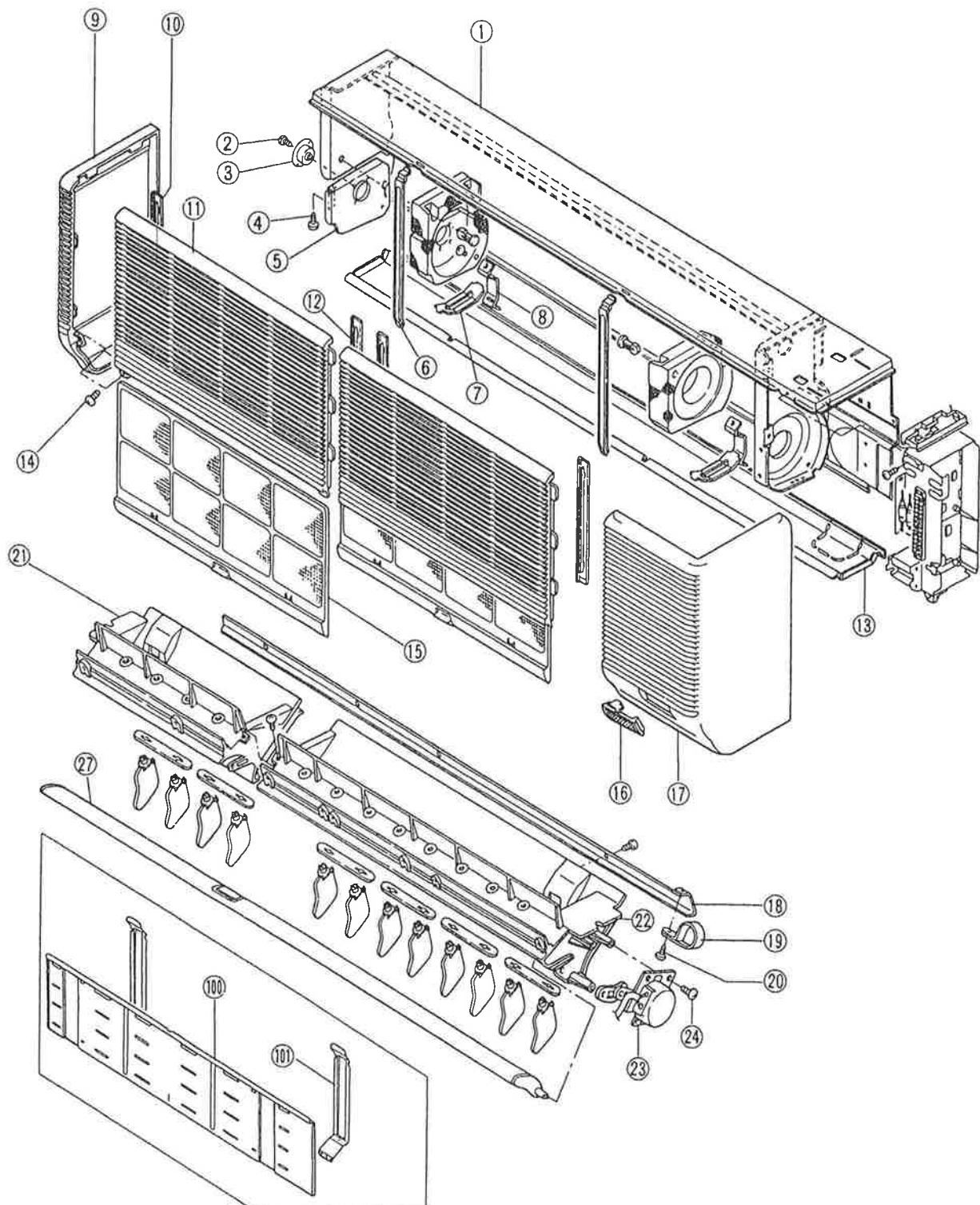
14.REPLACEMENT PARTS<INDOOR UNIT>

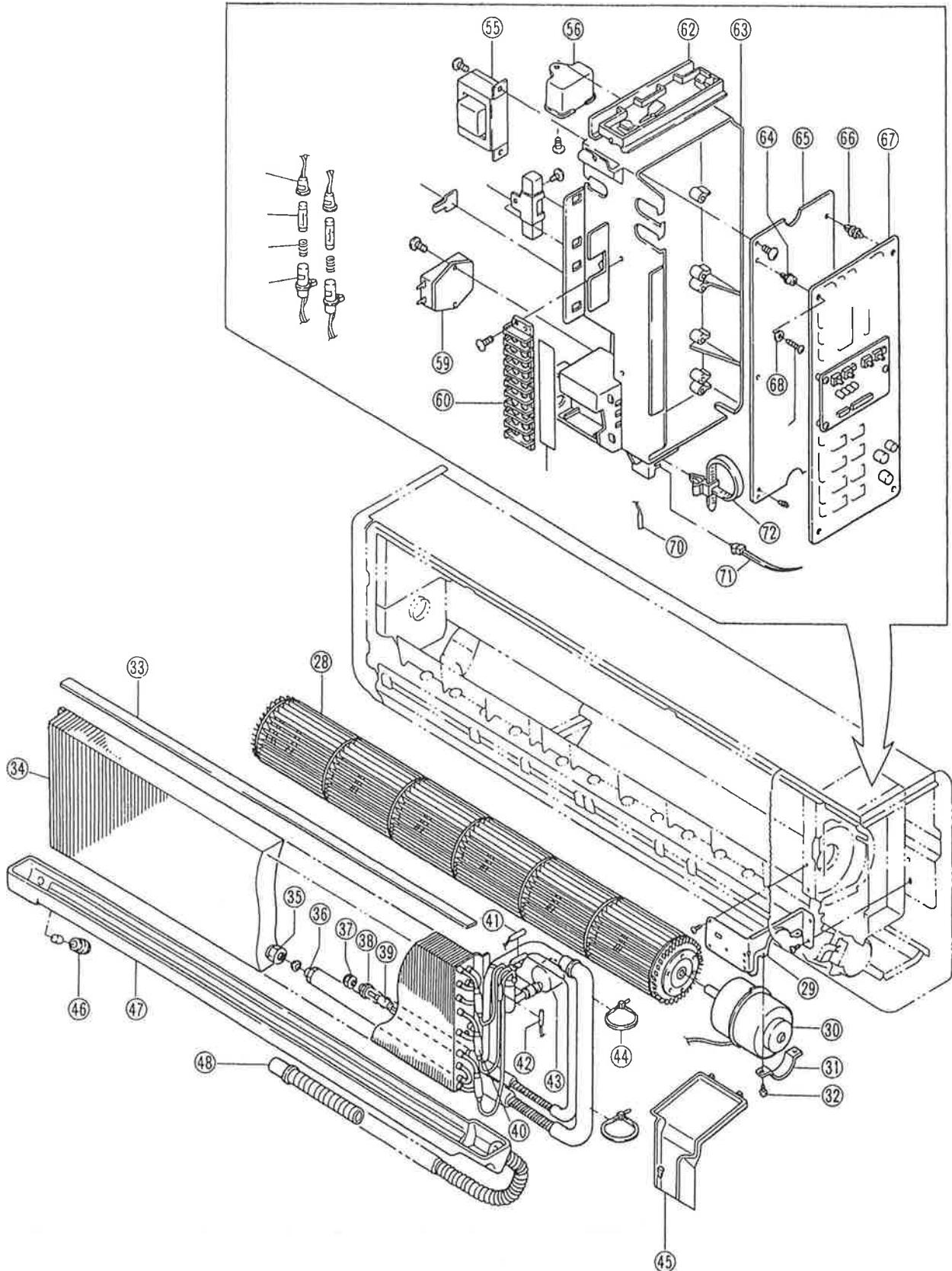
REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT		※REC PARTS
			P112EM1HP	P140EM1HP	
81	Screw 4TS8	38-114110	36	36	
82	Shaft Fan	05-839310	1	1	
83	Stopper Screw 10	38-791130	2	2	
84	Coupling Shift	05-832750	1	1	※
85	Fanmotor	06-854570	1	—	※
85		06-854580	—	1	※
86	Fanmotor Installing Stay	05-839420	4	4	
87	4 Nut	08-405710	2	2	
88	Hexagonal Screw 4TW20 with Flage	08-405630	2	2	
89	Fanmotor Installing Plate	05-839280	1	1	
90	Hexagonal Screw 8TW14 with Flage	38-990980	4	4	
91	8 Washer	38-490400	4	4	
92	Screw 4TS8	38-114110	1	1	
93	Running Capacitor	06-834530	1	—	※
93		06-838820	—	1	※
94	Fan Base As	45-581700	1	1	
96	Stay Guider Fan Base As	42-557990	1	1	
97	Binding tube(197)	39-220020	1	1	
98	Insulation tube(16)	05-974380	1	1	
99	Insulation tube(22)	05-970240	1	1	
100	Binding tube(197)	39-220050	1	1	
101	Stay Float Switch	02-857120	1	1	
102	Float Switch As	46-843490	1	1	※
102	Cover Float Switch	06-813380	1	1	
103	Screw 4TS8	38-114110	1	1	
106	Distributor As	F5-001360	1	—	※
106		F5-001370	—	1	※
106	Distributor(4P)	E5-102570	1	—	※
106	Distributor(6P)	E5-100850	—	1	※
107	Electric Expansion Valve	E5-100940	1	—	※
107		E5-100950	—	1	※
108	Spring For Sensor	05-840710	1	1	
109	Thermister As	46-838600	1	1	※
110	Strainer	E5-102530	1	1	※
111	Strainer	E5-101670	1	1	※
112	Union(3/8)	E5-100540	1	1	
113	Flare Nut(3/8)	E5-100710	1	1	
114	Flare Nut(6/8)	E5-100080	1	1	
115	Union(3/8)	E5-100810	1	1	
116	Coil Sensor	06-826390	1	1	※
117	Spring For Sensor	05-840710	1	1	
118	Screw 4TS8	38-114110	4	4	
119	Seal Panel Eva(R) As	42-556310	1	1	
120	Evaporator As	F5-001260	1	—	
120		F5-001270	—	1	
121	Screw 4TS8	38-114110	4	4	
122	Seal Panel Eva(L) As	42-556320	1	1	
123	Drain Pan As	45-581740	1	1	
124	Drain Seal Cap	02-847090	1	1	
125	Insulating Tube(28)	05-816760	1	1	
126	Binding Tube(197)	39-220050	1	1	

—	Insulating Tube(26)	05-975080	1	1	
—	Insulating Tube(43)	05-957680	1	1	
—	Clip Drain	05-955910	1	1	
—	10Washer	38-490450	8	8	
—	Drain Hose	05-865700	1	1	
—	Polyethylene Drain Hose	02-484830	1	1	
—	Binding Tube(245)	39-220060	2	2	
—	Code Clamp	06-460100	2	2	

■CS-112EM1HP,CS-P140EM1HP

CS-P112EM1HP



●Control Box Parts

14. REPLACEMENT PARTS<INDOOR UNIT>

CS-P22KMIHP, CS-P36KMIHP, CS-P45KMIHP
CS-P56KMIHP, CS-P71KMIHP

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT					※REC PARTS
			22KMIHP	36KMIHP	45KMIHP	56KMIHP	71KMIHP	
1	Cabinet As	42-557750	1	1	1	—	—	
		42-557300	—	—	—	1	1	
2	Screw 4TS8	38-114110	2	2	2	2	2	
3	Bearing	05-857010	1	1	1	1	1	
4	Screw 4TS8	38-114110	4	4	4	4	4	
5	Bearing holder	02-858390	1	1	1	1	1	
6	Joint Stay	02-858440	1	1	1	1	1	
8	Cabinet holder	02-858450	2	2	2	2	2	
9	Side cover(L)	02-857680	1	1	1	1	1	
10	Grill filter(L)	02-857660	1	1	1	1	1	
11	Inlet grill	02-859620	1	1	1	1	1	
		02-857690	—	—	—	—	—	
12	Rail filter(L)	02-857670	1	1	1	1	1	
13	Cover panel bottom	02-859640	1	1	1	—	—	
		02-858420	—	—	—	1	1	
14	Screw 4TS12	38-114310	1	1	1	1	1	
15	Filter	02-859630	2	2	2	—	—	※
		02-857650	—	—	—	2	2	※
16	Cover photo receiver	02-858000	1	1	1	1	1	
17	Side cover(R)	02-858010	1	1	1	1	1	
18	Grill joint stay As	42-559160	1	1	1	—	—	
		42-559150	—	—	—	1	1	
19	Screw 4TS8	38-114110	5	5	5	5	5	
20	Drain hose clamp	05-838510	1	1	1	1	1	
21	Outlet grill(L)	42-558720	1	1	1	—	—	
		42-558710	—	—	—	1	1	
22	Outlet grill(R)	42-558700	1	1	1	1	1	
23	Louver motor As	46-935430	1	1	1	1	1	
24	Screw 4TS8	38-114110	3	3	3	3	3	
25	Connector wing	02-857960	4	4	4	4	4	
26	Vertical wing	02-857970	8	8	8	8	8	
27	wing As	42-558760	1	1	1	—	—	※
		42-558750	—	—	—	1	1	※
28	Cross flow fan	06-838190	1	1	1	—	—	※
		06-837940	—	—	—	1	1	※
29	Bracket motor As	45-584330	1	1	1	1	1	※
		06-854970	1	1	1	—	—	※
31	Motor crammer	05-838330	1	1	1	1	1	※
32	Screw 4TS8	38-114110	2	2	2	2	2	
34	Evaporator	E5-105430	1	1	1	—	—	
		E5-105440	—	—	—	1	1	
36	Union(5/8)	E5-100500	—	—	—	1	1	
		E5-100490	1	1	1	—	—	
37	Flare nut(3/8)	E5-100710	1	1	1	—	—	
		E5-100090	1	1	1	1	1	
38	Flare(4/8)	E5-100720	—	—	—	1	1	
		E5-100540	1	1	1	—	—	
39	Flare(5/8)	E5-100540	—	—	—	1	1	
		E5-100540	1	1	1	—	—	
40	Union(3/8)	E5-100540	1	1	1	1	1	※
		E5-100540	1	1	1	1	1	※
41	Strainer	E5-105890	1	1	1	1	1	※
		E5-105540	3	3	3	4	4	※
42	Muffler	46-942970	1	1	1	1	1	
		46-942980	1	1	1	1	1	
43	Thermister A As	E5-105730	1	1	1	—	—	※
		E5-105740	—	—	—	1	1	※
45	Thermister B As	E5-105740	—	—	—	1	1	※
		E5-105740	1	1	1	1	1	※
46	Electrical expansion valve	E5-105730	1	1	1	—	—	※
		E5-105740	—	—	—	—	—	※
47	Sub drain pan	E5-105740	—	—	—	1	1	※
		E5-105740	1	1	1	1	1	※
48	Drain cap As	E5-105740	1	1	1	1	1	※
		E5-105740	1	1	1	1	1	※
49	Drain pan As	E5-105740	1	1	1	—	—	※
		E5-105740	—	—	—	—	—	※
50	Drain hose	E5-105740	—	—	—	1	1	※
		E5-105740	1	1	1	1	1	※
51	sensor spring	E5-105740	2	2	2	2	2	2
		E5-105740	—	—	—	—	—	※
52	Transformer	E6-100240	1	1	1	1	1	※
		E6-100240	—	—	—	—	—	※
53	Screw 4TS8	38-114110	1	1	1	1	1	※
		38-114110	—	—	—	—	—	※
54	Electric capacitor	06-835800	1	1	1	1	1	
		06-833540	1	1	1	—	—	
55	Noise filter	06-835340	—	—	—	1	1	
		06-100420	1	1	1	1	1	
56	Pan head screw 3TS8	38-152110	1	1	1	1	1	
		06-838480	1	1	1	1	1	
57	Pan head screw 4TS14	38-154410	2	2	2	2	2	
		06-837320	1	1	1	1	1	
58	Pan head screw 3TS16	38-152510	4	4	4	4	4	
		06-805290	4	4	4	4	4	
59	Relay box	F6-001140	1	—	—	—	—	
		F6-001150	—	1	—	—	—	
60	Locking card space8	F6-001160	—	—	1	—	—	
		F6-001170	—	—	—	1	—	
61	Printed circuit board A	F6-001180	—	—	—	—	1	
		06-838060	1	1	1	1	1	
62	Printed circuit board B	06-858060	1	1	1	1	1	

	14.REPLACEMENT PARTS<INDOOR UNIT>	
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REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT					※REC PARTS
			22KMIHP	36KMIHP	45KMIHP	56KMIHP	71KMIHP	
68	PC board bush	06-817930	4	4	4	4	4	
	PC board collar	06-835140	4	4	4	4	4	
70	Thermister(Room temp.)	06-852100	1	1	1	1	1	
71	Snap band(30)	06-836220	1	1	1	1	1	
72	Code cramp(105)	06-821190	1	1	1	1	1	

Attached parts

100	Installation board	42-557800	1	1	1	—	—	
		42-557460	—	—	—	1	1	
101	Hanging bracket	02-858410	1	1	1	1	1	
	Hexagonal 5S25	08-404960	1	1	1	1	1	
	Piping holder	05-838200	2	2	2	2	2	
	Tube banding 245	39-220060	4	4	4	4	4	
	Heatinsulating tube(30)	05-801270	1	1	1	—	—	
	Heat insulating tube(34)	05-957540	—	—	—	1	1	
	Screw 4TS12	42-558910	2	2	2	2	2	
	Paper pattern of installation	07-919170	1	1	1	—	—	
		07-919160	—	—	—	1	1	

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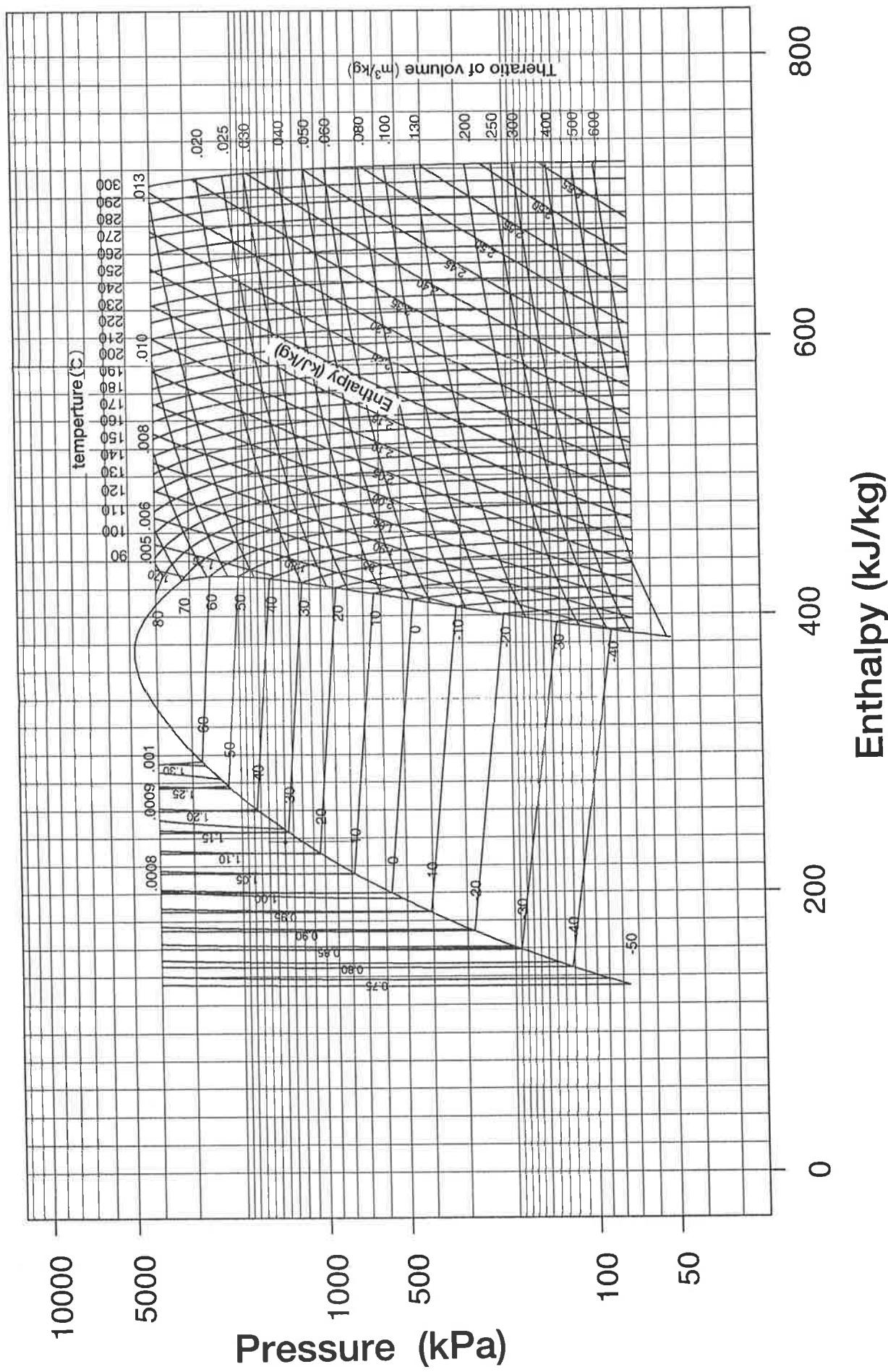
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Pressure - Enthalpy (R407C)





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(Packaged Air Conditioner Division of Matsushita Refrigeration Co., Ltd., has been certified to comply with the International Organization for Standardization's ISO-9001 standard for quality assurance.)



Packaged Air Conditioner Division of Matsushita Refrigeration Co., Ltd. has been certified to comply with the International Organization for Standardization's ISO-14001 standard for environmental management systems.