PCH24EK1
PCH30EK1
PCH36EK1
PCH42EK1

CONTENTS

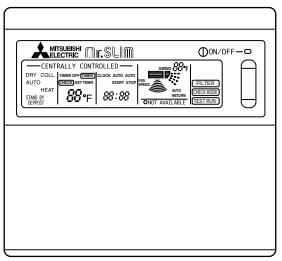
1 TECHNICAL CHANGE

Differences with OC002 which is a basic service manual.

Change points				EK	EK1
Remote controller	Appearances			4-3/4 × 2-3/4 × 5/8	5-1/8 × 4-3/4 × 3/4
	Dip switch	SW17	No.9	Switch for temperature unit	Canceled
			No.0	Switch for louvers	Canceled
		SW18		—	Addition of "Mode selector"
Indoor controller	Dip switch	SW1	No.10	OFF	ON
		SW5	No.3	—	Addition of "Not yet used"
			No.4	—	Addition of "LOSSNAY interlocked or not"
	Connector for LOSSNAY interlocked			—	Addition of "CN2L"
Optional parts	Program timer			PAC–SK65PT	PAC–SK32PTA

2 FEATURES

PCH24EK
Indoor Unit



Microprocessor
Remote controller

Models	Cooling capacity / Heating capacity	SEER
PCH24EK1	24,000 / 27,000 (33,500) Btu/h	10.3
PCH30EK1	30,000 / 33,000 (41,500) Btu/h	10.0
PCH36EK1	35,400 / 38,000 (47,600) Btu/h	10.4
PCH42EK1	42,000 / 45,000 (54,600) Btu/h	10.0

1. ADVANCED MICROPROCESSOR CONTROL

(1) Easy to use Microprocessor (remote controller)

1) Ultra-Thin Remote Controller

The streamlined, square controller is designed to blend with any kind of interior and the adoption of a sophisticated microprocessor allows you to carry out a wide range of operations easily.

2) Attractive Liquid Crystal Display (LCD)

Units operation mode, set temperature, room temperature, timer setting, fan speed, louver operation, and air flow direction are displayed on the remote controller with the easily understood visual Liquid Crystal Display (LCD).

3) Convenient 24-Hour ON-OFF Timer

The timer allows Mr.SLIM to be switched on and off automatically at the time you set. Once the timer is set, the remaining time is shown on the LCD.

4) Self-Diagnostic Feature Indicates Faults Instantly

In the rare case when a problem occurs, the unit stops operating and the set temperature indicator changes to the self-diagnostic indicator, indicating the location of the fault.

If the check switch is pressed twice, the unit stops operating and the check mode is initiated. The cause of the most recent problem stored in the memory is displayed on the LCD. This is extremely useful for maintenance purposes.

5) Useful Memory Feature for Storing Instructions

The previous set value is memorized so that constant temperature control can be obtained. This is convenient when, for example, a power failure occurs.

(2) Non-polar Two-Wire Remote Controller Cables

The non-polar, two-wire type remote controller cable is slim, installation is simple and trouble-free. Remote controller wire can be extended up to 550 yards.

(3) Automatic Cooling/Heating Changeover Operation

An automatic cooling and heating changeover operation system is provided to ensure easy control and year-round air conditioning.

Once the desired temperature is set, unit operation is switched automatically between cooling and heating, in accordance with the room temperature. In addition, the use of outdoor unit fan speed controller enables cooling operation at outdoor temperature as low as 23°F .

2. INNOVATIVE SYSTEM CONTROL BY MICROPROCESSORS

The most significant feature of the series PCH-EK is the advanced microprocessor system control. Behind the development of this system is the recent world-wide trend in the air conditioning of larger buildings, away from centralized duct systems in favor of a large number of individual split type units. There are a number of reasons for this: first, costly, troublesome duct installation is eliminated; second, the overall air conditioning balance is excellent; and third, operation cost is low since flexible control of each unit is possible. This system control was developed exclusively by Mitsubishi in the light of this demand. Microprocessor control makes possible individual control, group control, control using two remote controllers, remote on/off control and individual control without troublesome modifications to the equipment.

(1) Individual Control by Gathering Remote Controllers

A Series PCH-FK unit is installed in each room, and the remote controller are gathered together in separate location, where each unit is controlled individually.

Each remote controller is connected to its indoor unit by non-polar 2-wire cable to eliminate the possibility of mis-wiring. Separation can be as much as 550 yards, making this type of control extremely easy to implement. Thermistors in the indoor unit maintain each room at its own individually set temperature.

(2) Group Control by a Single Remote Controller

In an application requiring a number of air conditioner units in a large area on a single floor, up to 50 units can be centrally controlled using a single remote controller. The remote controller controls Power ON-OFF, set temperature, fan speed, swing louver ON-OFF timer, and auto vane position of all units of the group. Obviously, if all the units started simultaneously, the surge current would be unacceptably high. Therefore the microprocessor board of each indoor unit has a 8-toggle DIP switch that can be programmed to give sequential starting with up to 50 seconds delay. When the switch of the remote controller is pressed, master unit comes on immediately, followed by the other units in the programmed order. Thereafter the thermistor in each indoor unit controls compressor operation to keep the room at the set temperature.

The remote controller is connected to the indoor units by non-polar 2-wire cable. Total cable length can be as much as 550 yards. This system can be applied to the air conditioning of large offices or conference rooms, supermarkets, etc.

(3) Control Using Two Remote Controllers

Two remote controllers can be used to control either one unit or several units in group control. This makes it possible to control units with ease either from a distance or at close range. Units operate according to the latest commands from either remote controller.

(4) Both Remote ON/OFF Control and Individual Control

All units can be turned on and off simultaneously using the remote ON/OFF switch, and also individual units can be controlled from the remote controllers.

This system is well suited to buildings having a large number of rooms. In offices, for example, all units can be started together to cool or heat the premises before workers arrive, operated as necessary by individual remote controllers during the day, and stopped together at the end of business.

3. REDI-CHARGED REFRIGERANT SYSTEM

When refrigerant tubing is 100ft or less, it is unnecessary to charge additional refrigerant. This can contribute to enhance installation quality and reduce installation time.

4. MAXIMUM COMFORT AIR CONDITIONING

(1) Auto-Angle Airflow for Comfortable Air Conditioning

PCH units offer a choice of airflow outlets, a horizontal one and a downward-pointing one, and they incorporate auto-angle vanes which can be used independently by means of microprocessor control. This has led to the development of a new auto-angle airflow function and has made it possible to obtain the most comfortable forms of heating and cooling to suit the requirements of all kinds of rooms.

When operating in the heating mode the vanes automatically set the downward direction of hot air at an angle of 70°.

When cooling, they are set at 0° so that 100% horizontal airflow is achieved. Altogether, four* directions of airflow can be selected by remote control: 100% downward airflow, 80% downward airflow (plus 20% horizontal airflow), 60% downward airflow (plus 40% horizontal airflow) and 100% horizontal airflow.

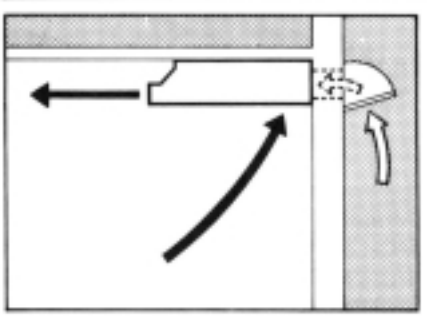
* When the fan speed is on low during cooling, only three types are available: 100% and 80% downward airflow and 100% horizontal airflow.

(2) Swing Flow Louvers

The swing Flow Louvers automatically change the air flow direction for desirable air distribution.

(3) Fresh-Air Intake

The PCH-EK series also has fresh air intake, providing more comfortable, healthful air conditioning through better ventilation. The rear panel has a knock-out for the intake of fresh air.



5. STABLE COOLING EVEN AT OUTDOOR TEMPERATURES AS LOW AS 23°F MAKES YEAR-ROUND AIR-CONDITIONING POSSIBLE

The microprocessor automatically adjusts fan speed in accordance with outdoor temperature to maintain the coolant at an even condensing temperature. The result is smooth, efficient cooling even when temperatures outdoors drop as low as 23°F. This makes the unit ideal for a wide range of specialized cooling needs, such as rooms with many office machines or com-

6. DRAIN PUMP FOR EASY PIPE CONNECTION (Option)

This mechanism, with its capacity to raise drain water 20” above the ceiling line, is convenient for removing water and avoiding piping contact with beams, etc.

Note : This can not be mounted in the unit.

7. SLIM, COMPACT AND SPACE SAVING

(1) Space Saving Design

Because the PCH-EK series indoor units are designed to be suspended from the ceiling, valuable floor space and wall surfaces are not used. The unit is only 10-1/8” high and 50-7/16” wide (PCH24/30EK).

The outdoor units are also slim line, with a depth dimension of only 11-5/8” (PUH-24EK).

(2) Flush-To-The-Wall Installation

Since the units in the PCH-EK series are installed flush against the back wall, connection pipes are hidden. This gives the room a touch of sleek sophistication.

8. EASY INSTALLATION

Installation is simple, thanks to the easy-connection refrigerant lines.

The indoor unit is easy to mount and requires only a minimum of wiring, saving your time, labor, and money.

9. HIGH RELIABILITY AND EASY SERVICING

In addition to the self-diagnostic function, units are also equipped with a 3-minute time delay mechanism, an auto restart function, an emergency operation function, a test run switch, etc., to assure high reliability and easy servicing.

10. ECONOMICAL AND EFFICIENT OPERATION

- Mitsubishi exclusive LCD indicators show the temperature selected and the current room temperature. This system ensures full protection against excessive cooling.
- The Mitsubishi Electric split-type air-to-air PCH models feature highly precise compressors with large-capacity heat exchangers for efficient operation.

11. NITROGEN GAS IS CHARGED TO INDOOR UNIT

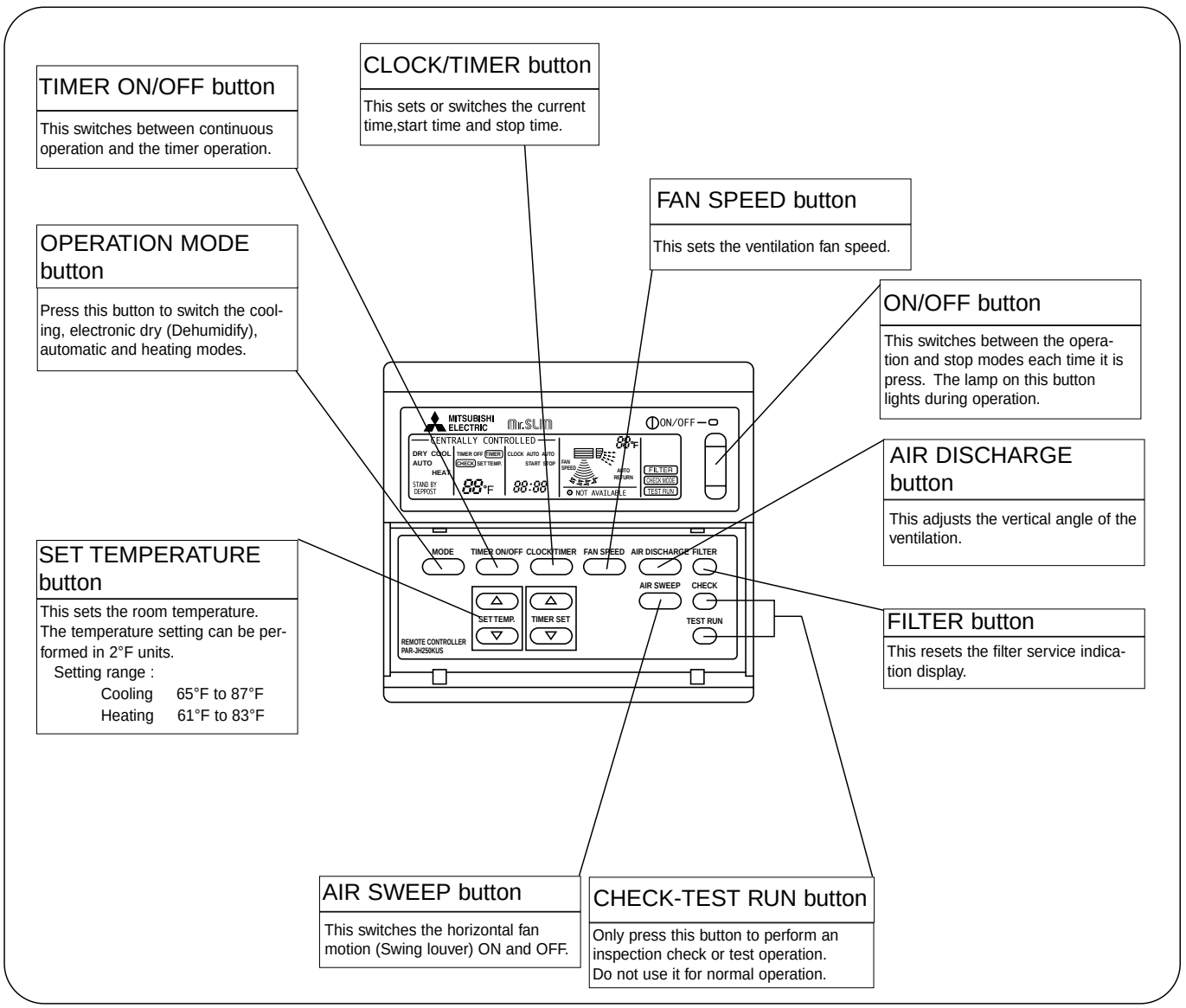
Indoor unit and refrigerant pipes are charged with nitrogen gas (N_2) instead of (R22) before shipment from the factory.

3 PART NAMES AND FUNCTIONS

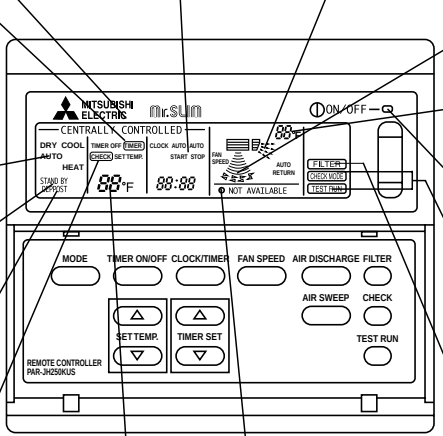
Remote controller

Once the controls are set, the same operation mode can be repeated by simply pressing the ON / OFF button.

Remote controller operation buttons



Remote controller display



CENTRALLY CONTROLLED display

This indicates when the unit is controlled by optional features such as central control type remote controller.

CLOCK display

The current time , start time and stop time can be displayed in ten second intervals by pressing the time switch button. The start time or stop time is always displayed during the timer operation.

In this display example on the bottom left, a condition where all display lamps light is shown for explanation purposes although this differs from actual operation.

AIR DISCHARGE display

This displays the air direction.

(TIMER) display

This indicates when the continuous operation and time operation modes are set.
It also display the time for the timer operation at the same time as when it is set.

FAN SPEED display

The selected fan speed is displayed.

88°F display

The temperature of the return air is displayed during operation. The display range is 47°F to 97°F. The display flashes 47°F when the actual temperature is less than 47°F and flashes 97°F when the actual temperature is greater than 97°F.

OPERATION MODE display

This indicates the operation mode.

Operation lamp

This lamp lights during operation, goes off when the unit stops and flashes when a malfunction occurs.

STANDBY display

This indicates when the standby mode is set from the time the heat operation starts until the heating air is discharged.

DEFROST display

This indicates when the defrost operation is performed.

(CHECK MODE) (TEST RUN) display

This display lights in the check mode or when a test operation is performed.

(CHECK) display

This indicates when a malfunction has occurred in the unit which should be checked.

88°F display

This displays the selected setting temperature.

⊙display

This lamp lights when electricity is supplied to the unit.

(FILTER) display

This lamp lights when the filter needs to be cleaned.

Caution

- Only the ⊙ display lights when the unit is stopped and power supplied to the unit.
- When power is turned ON for the first time the (CENTRAL CTRL) display appears to go off momentarily but this is not a malfunction.
- When the central control remote control unit, which is sold separately, is used the ON-OFF button,OPERATION MODE button and SET TEMP. button do not operate.

4 SPECIFICATIONS

MODELS : PCH24/30/36/42EK1

Item \ Model			PCH24EK1	PCH30EK1	PCH36EK1	PCH42EK1
Capacity	Cooling *1	Btu/h	24,000	30,000	35,400	42,000
	Heating *1	Btu/h	27,000[32,500/33,500]	33,000[39,800/41,500]	38,000[45,900/47,600]	45,000[52,900/54,600]
	Heating *2	Btu/h	18,400[23,900/24,900]	18,000[24,800/26,500]	19,600[27,500/29,200]	24,800[32,700/34,400]
Moisture removal		Pints/h	7.0	9.1	10.9	12.3
Power Consumption	Cooling *1	kW	2.46	3.06	3.53	4.37
	Heating *1	kW	2.42[4.02/4.32]	3.13[5.13/5.63]	3.4[5.7/6.2]	4.3[6.6/7.1]
	Heating *2	kW	2.1[3.7/4.0]	2.6[4.6/5.1]	2.7[5.0/5.5]	3.2[5.5/6.0]
EER	*1		9.8	9.8	10.0	9.6
SEER			10.3	10.0	10.4	10.0
HSPF			7.1	7.1	7.4	7.3
COP	*1		3.3	3.1	3.3	3.1
	*2		2.6	2.4	2.1	2.3
INDOOR UNIT MODELS			**PCH24EK1**	**PCH30EK1**	**PCH36EK1**	**PCH42EK1**
External finish			Munsell 2.5Y 8/0.3 & N2			
Power supply		V,phase,Hz	208/230,1,60			
Max.fuse size (time delay)		A	20	25	25	25
Min.ampacity		A	12	15	15	17
Fan motor		F.L.A.	0.7	0.7	1.3	1.3
Booster heater		A(kW)	7.6/8.4<1.6/1.9>	9.8/10.8<2.0/2.5>	10.8/12.0<2.3/2.8>	10.8/12.0<2.3/2.8>
Airflow Hi-Lo	Dry	CFM	920-740	920-740	1,270-990	1,270-990
	Wet	CFM	830-670	830-670	1,100-860	1,100-860
Sound level Hi-Lo		dB	50-43	50-43	51-45	51-45
Unit drain pipe O.D.		in.	1	1	1	1
Dimensions	W	in.	50-7/16		62-1/4	
	D	in.	26-13/16			
	H	in.	10-1/8			
Weight		lb	101		119	
OUTDOOR UNIT MODELS			PUH-24EK	PUH30EK	PUH36EK1	PUH42EK1
External finish			Munsell 5Y 7/1			
Power supply		V,phase,Hz	208/230,1,60			
Max.fuse size (time delay)		A	20	30	30	40
Min.ampacity		A	16	20	22	27
Fan motor		F.L.A.	0.65+0.65	0.75+0.75	0.75+0.75	0.8+0.8
Compressor	Model (type)		NH33NBD	NH41NAD	NH47NAD	NH569NXA
		R.L.A.	11.5	14.0	17.5	20.0
		L.R.A.	54	73	87	105
Crankcase heater		A(W)	0.16/0.17<33/39>	0.16/0.17<33/39>	0.16/0.17<33/39>	0.16/0.17<33/39>
Refrigerant control			Capillary tube			
Defrost method			Reverse cycle			
Sound level		dB	55	55	55	56
Dimensions	W	in.	34-1/4		38-3/16	
	D	in.	11-5/8		13-9/16	
	H	in.	49-9/16		49-9/16	
Weight		lb	202	245	246	268
REMOTE CONTROLLER			With indoor unit			
Control voltage (by built-in transformer)			Indoor unit-remote controller: DC12V. Indoor unit-outdoor unit: DC12V			
REFRIGERANT PIPING			Not supplied (optional parts)			
Pipe size	Liquid	in.	3/8	1/2		
	Gas	in.	5/8	3/4		7/8
Connection method	Indoors		Flared			
	Outdoors		Flared			
Between the indoor & outdoor units	Height difference	ft	164			
	Piping length	ft	165			

NOTES : *1.Rating conditions (cooling)-indoor : 80˚FDB,67˚FWB outdoor : 95˚FDB,75˚FWB.
(heating)-indoor: 70˚FDB,60˚FWB outdoor : 47˚FDB,43˚FWB.
*2.Rating conditions (heating)-indoor : 70˚FDB,60˚FWB outdoor : 17˚FDB,15˚FWB.
*3.Heating capacity and power consumption in [ ] includes booster heater operation at 208/230V.

Operating range

		Indoor intake air temperature	Outdoor intake air temperature
Cooling	Maximum	95˚FDB,71˚FWB	115˚FDB
	Minimum	67˚FDB,57˚FWB	0˚FDB *
Heating	Maximum	80˚FDB,67˚FWB	75˚FDB,65˚FWB
	Minimum	70˚FDB,68˚FWB	17˚FDB,15˚FWB

* In case of the wind baffle is installed.
(In case of the wind baffle is not installed, the minimum temperature will be 23˚FDB.)

5 DATA

MODELS : PCH24/30/36/42EK1

1. PERFORMANCE DATA

1) COOLING CAPACITY

Models	Models		Outdoor intake air DB temperature(˚F)														
	Airflow (CFM) / B.F	IWB (˚F)	75			85			95			105			115		
			TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
PCH24EK1	900 / 0.13	71	28.4	16.1	2.15	27.1	15.8	2.34	25.7	15.4	2.53	24.3	15.1	2.74	22.7	14.8	2.95
		67	26.3	18.6	2.10	25.1	18.2	2.29	24.0	17.8	2.46	22.7	17.3	2.67	21.0	16.6	2.87
		63	24.5	20.5	2.00	24.5	20.1	2.18	22.2	19.4	2.38	21.0	18.8	2.56	19.8	18.3	2.76
PCH30EK1	900 / 0.10	71	34.7	17.8	2.69	33.5	17.5	2.91	32.1	17.1	3.17	30.8	16.8	3.46	29.2	16.3	3.73
		67	32.5	21.2	2.62	31.4	20.7	2.84	30.0	20.2	3.06	28.8	19.7	3.36	27.4	19.1	3.63
		63	30.2	23.6	2.55	29.2	23.1	2.76	28.0	22.4	3.02	26.8	21.8	3.28	25.4	21.1	3.54
PCH36EK1	1,100 / 0.13	71	40.9	21.1	3.02	39.7	20.8	3.28	38.1	20.3	3.60	36.3	19.9	3.95	34.5	19.4	4.30
		67	38.1	24.9	2.95	36.7	24.3	3.23	35.4	23.8	3.53	33.7	23.1	3.85	32.1	22.5	4.18
		63	35.7	2.80	2.88	34.5	27.4	3.15	33.1	26.6	3.43	31.6	25.8	3.74	30.2	25.1	4.05
PCH42EK1	1,100 / 0.11	71	49.6	23.8	3.99	47.6	23.1	4.24	45.4	22.6	4.54	43.1	21.9	4.84	40.7	21.3	5.20
		67	46.0	28.4	3.86	44.2	27.6	4.09	42.0	26.7	4.37	39.9	25.8	4.64	37.7	24.9	4.95
		63	42.9	32.1	3.73	41.1	31.1	3.94	39.3	30.1	4.19	37.1	28.9	4.44	34.7	27.5	4.74

Notes 1. B.F. : Bypass Factor, IWB : Intake air wet-bulb temperature
TC : Total Capacity (x10^3 Btu/h), SHC : Sensible Heat Capacity (x10^3 Btu/h)
TPC : Total Power Consumption (kW)
2. SHC is based on 80˚FDB of indoor intake air temperature.
3. Cooling capacity correction factors and Refrigerant piping length (one way) range.

MODEL	Refrigerant piping length (one way)									
	25ft	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft
PCH24EK1	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PCH30EK1	1.0	0.981	0.986	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PCH36EK1	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PCH42EK1	1.0	0.975	0.955	0.935	0.918	0.900	0.884	0.869	0.855	0.840

2) HEATING CAPACITY

Models	Models		Outdoor intake air WB temperature(˚F)												Auxiliary heater (208V/230V)	
	Airflow (CFM)	IDB (˚F)	15		25		35		45		55		65			
			CA	PC	CA	PC	CA	PC	CA	PC	CA	PC	CA	PC	CA	PC
PCH24EK1	900	75	18.7	2.19	21.1	2.29	23.9	2.42	27.5	2.60	31.2	2.81	36.3	3.03	5.5	1.6
		70	19.1	2.09	21.3	2.19	24.3	2.29	27.9	2.45	32.1	2.68	36.9	2.91		
		65	19.5	1.98	21.6	2.03	24.7	2.16	28.6	2.31	33.0	2.54	37.6	2.79	6.5	1.9
PCH30EK1	900	75	22.2	2.54	25.4	2.70	29.0	3.03	32.9	3.37	37.3	3.75	41.3	4.08	6.8	2.0
		70	22.6	2.37	26.2	2.59	29.8	2.87	33.7	3.20	38.1	3.53	42.1	3.86		
		65	23.0	2.26	26.6	2.48	30.4	2.76	34.5	3.03	38.9	3.37	43.5	3.69	8.5	2.5
PCH36EK1	1,100	75	25.8	2.75	29.6	3.05	33.7	3.35	38.3	3.65	43.3	4.00	47.8	4.35	7.9	2.3
		70	26.2	2.63	30.4	2.90	34.5	3.15	39.1	3.45	44.0	3.78	48.8	4.15		
		65	26.8	2.48	31.0	2.75	35.3	3.05	40.5	3.35	45.2	3.63	50.6	3.93	9.6	2.8
PCH42EK1	1,100	75	26.6	3.41	32.5	3.67	39.1	4.03	45.6	4.45	53.2	4.98	60.9	5.55	7.9	2.3
		70	26.8	3.38	32.9	3.62	39.7	3.96	46.4	4.38	54.0	4.87	61.9	5.45		
		65	27.0	3.33	33.3	3.56	40.1	3.88	47.2	4.30	55.2	4.80	63.5	5.34	9.6	2.8

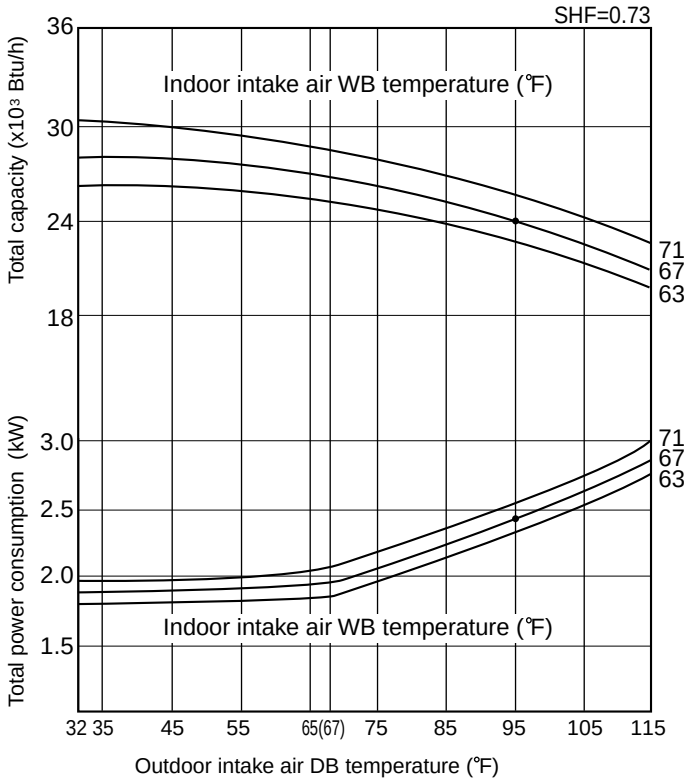
Notes 1. IDB : Intake air dry-bulb temperature
CA : Capacity (x10^3 Btu/h), PC : Power Consumption (kW)
2. When booster heater is "on", total capacity and total power consumption should be added the figures described in booster heater column.
•Booster heater ON : When the set temperature is higher than the room temperature by more than 5.4 deg.
•Booster heater OFF : When the set temperature is higher than the room temperature by less than 3.6 deg.
3. Heating capacity correction factors.

Models	Refrigerant piping length (one way)		
	Less than 100ft	100~130ft	130~164ft
PCH24EK1	1.00	0.995	0.990
PCH30EK1	1.00	0.995	0.990
PCH36EK1	1.00	0.995	0.990
PCH42EK1	1.00	0.995	0.990

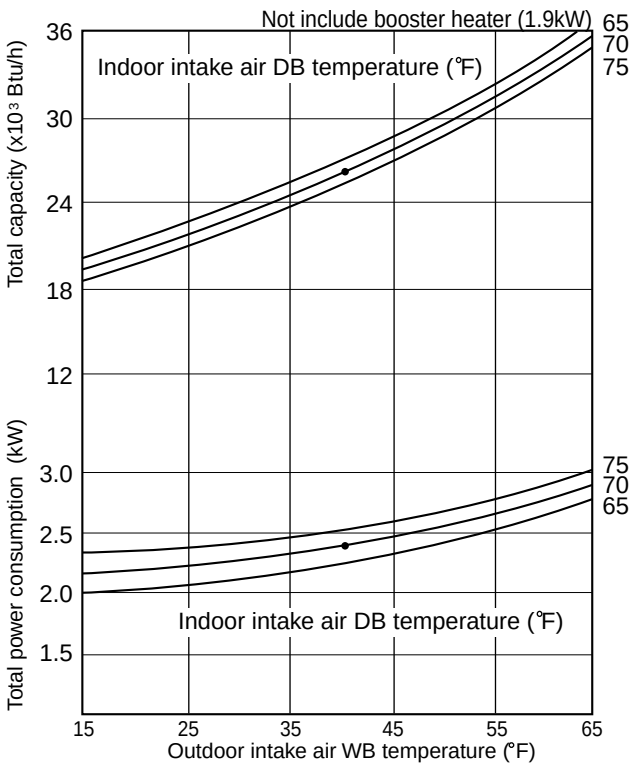
2. PERFORMANCE CURVE

NOTES : A point on the curve shows the reference point.

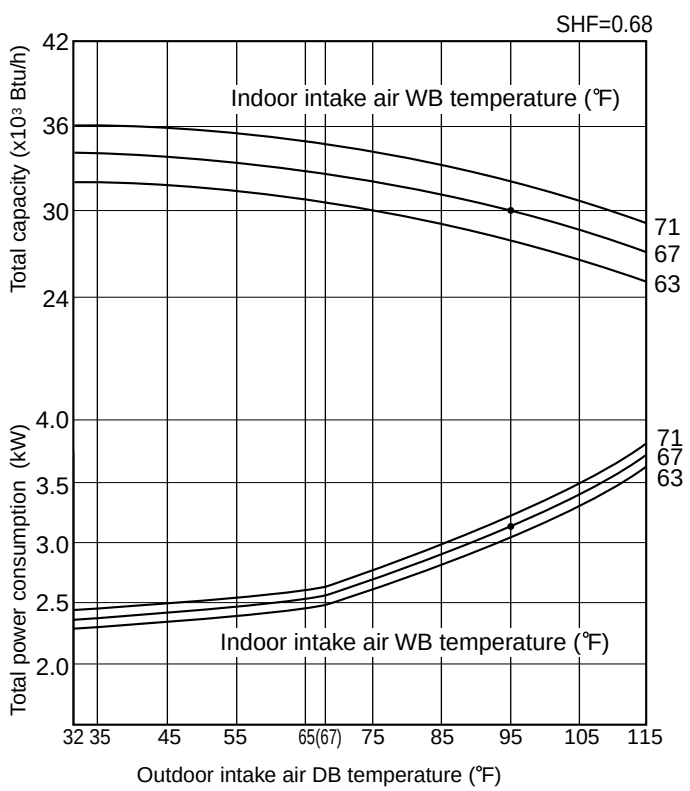
PCH24EK1 COOLING CAPACITY



PCH24EK1 HEATING CAPACITY



PCH30EK1 COOLING CAPACITY



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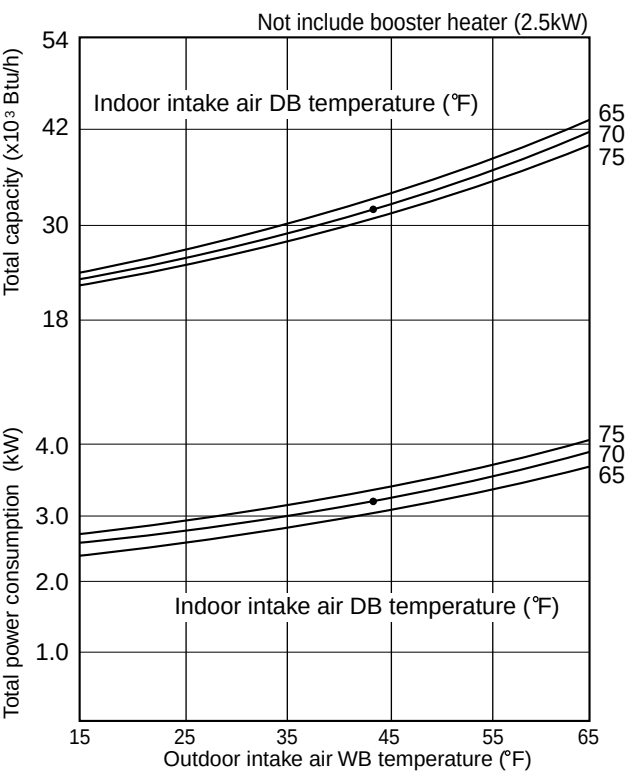
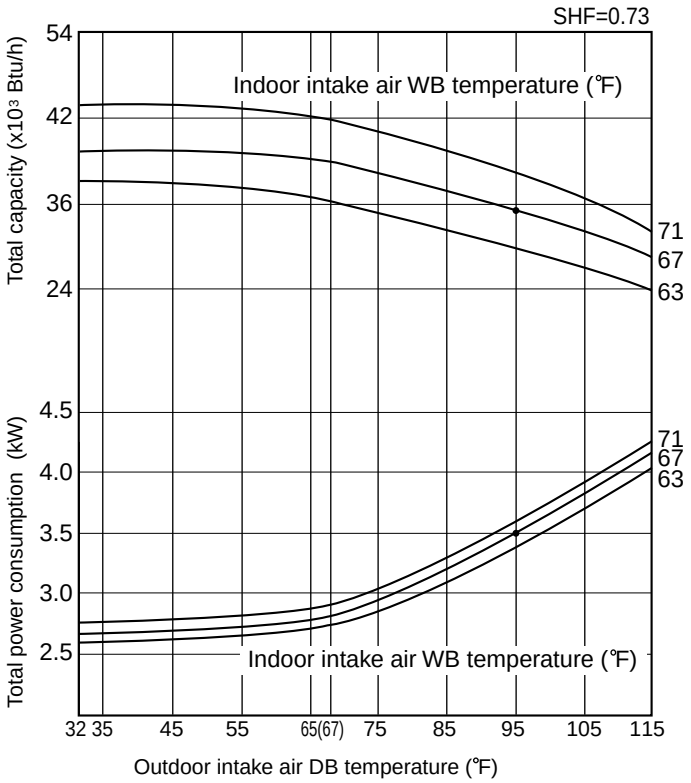
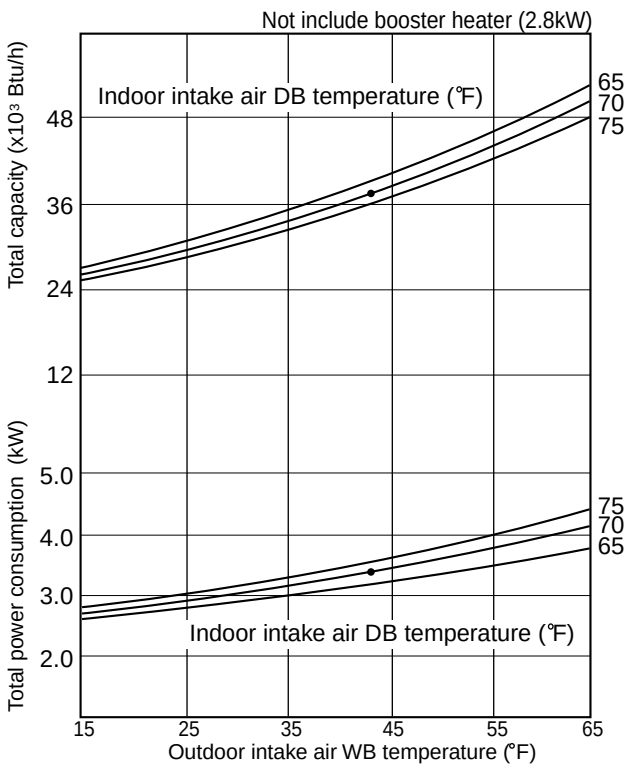


NOTES : A point on the curve shows the reference point.

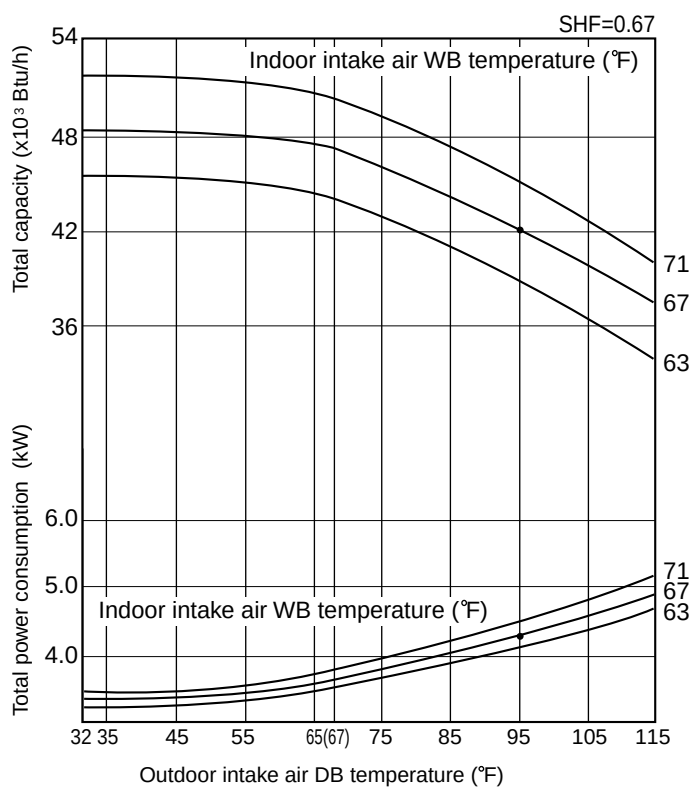
PCH36EK1 COOLING CAPACITY



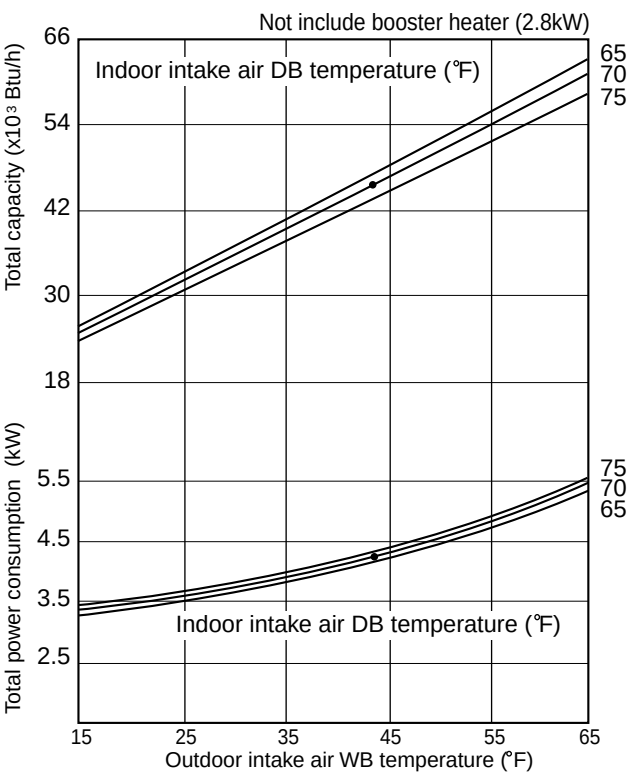
PCH36EK1 HEATING CAPACITY



PCH42EK1 COOLING CAPACITY



PCH42EK1 HEATING CAPACITY

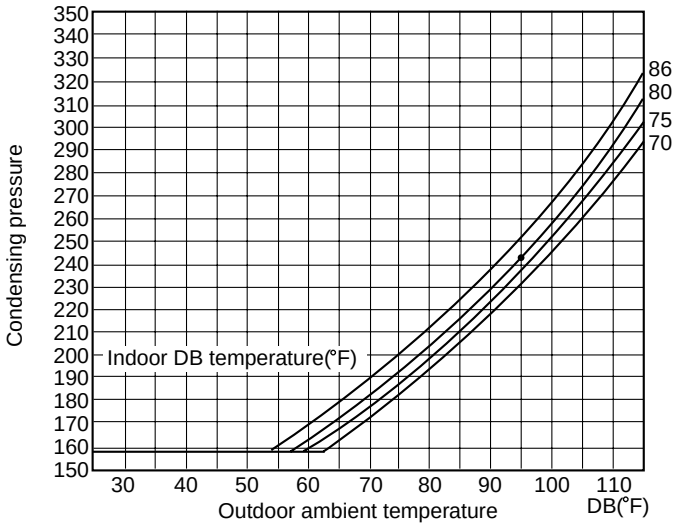


3. CONDENSING PRESSURE AND SUCTION PRESSURE

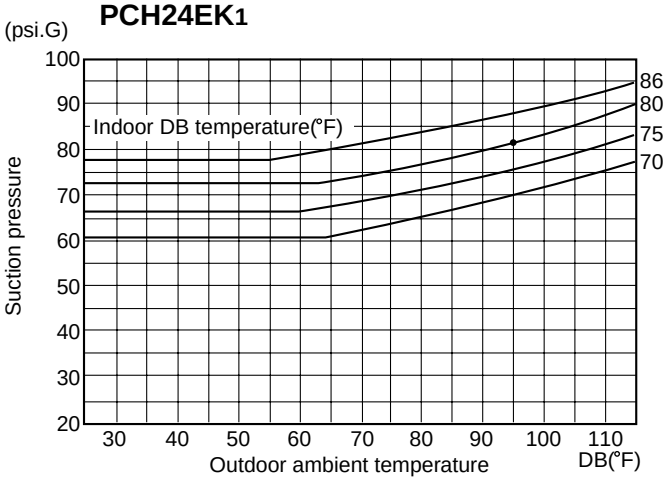
Data is based on the condition of indoor humidity 50%.
Air flow should be set at HI.
A point on the curve shows the reference point.

< Cooling mode>

PCH24EK1



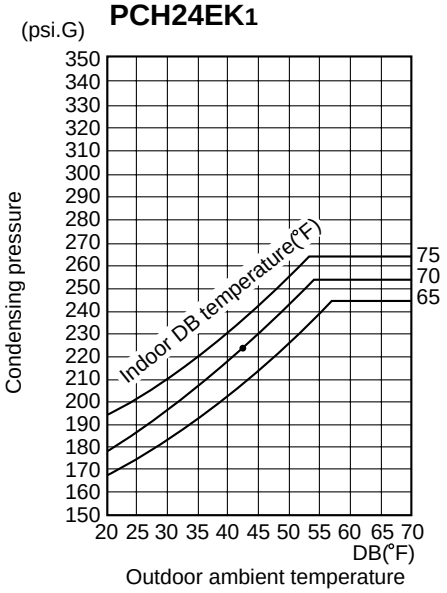
PCH24EK1



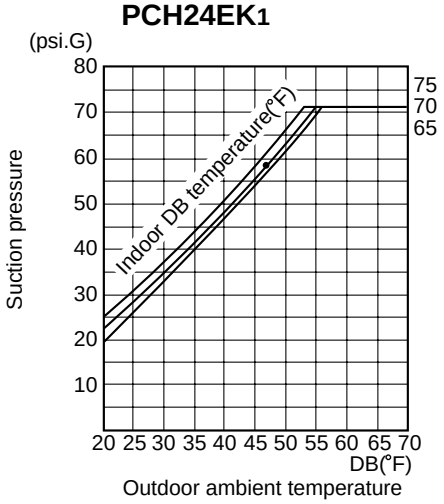
Data is based on the condition of outdoor humidity 75%.
A point on the curve shows the reference point.

< Heating mode>

PCH24EK1



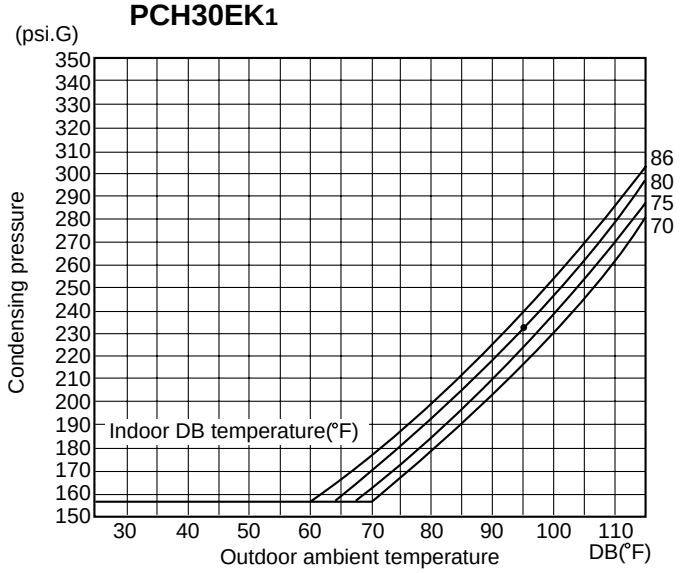
PCH24EK1



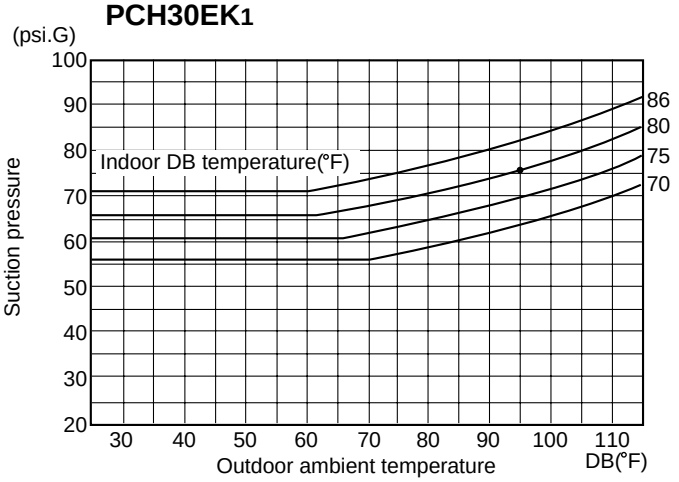
Data is based on the condition of indoor humidity 50%.
Air flow should be set at HI.
A point on the curve shows the reference point.

< Cooling mode>

PCH30EK1



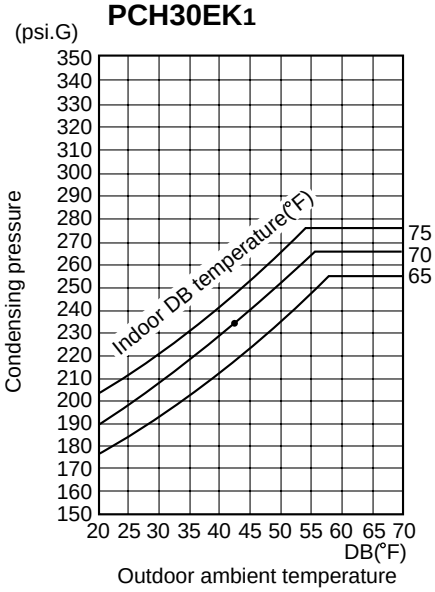
PCH30EK1



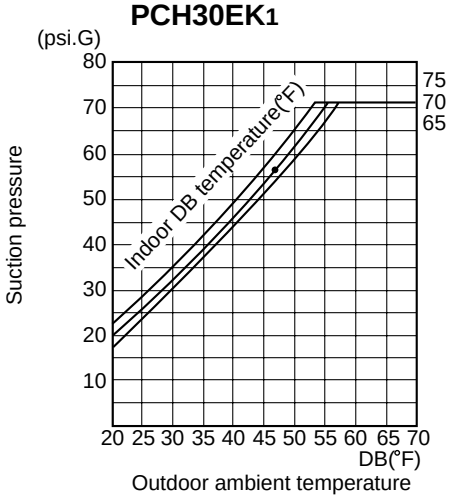
Data is based on the condition of outdoor humidity 75%.
A point on the curve shows the reference point.

< Heating mode>

PCH30EK1



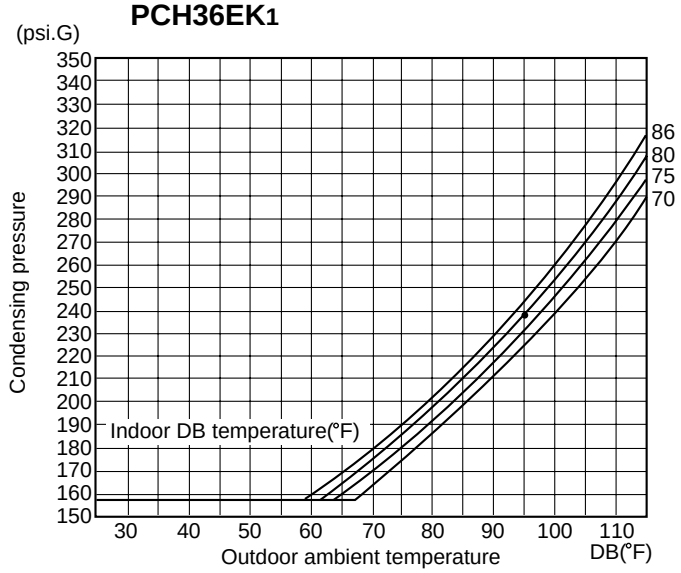
PCH30EK1



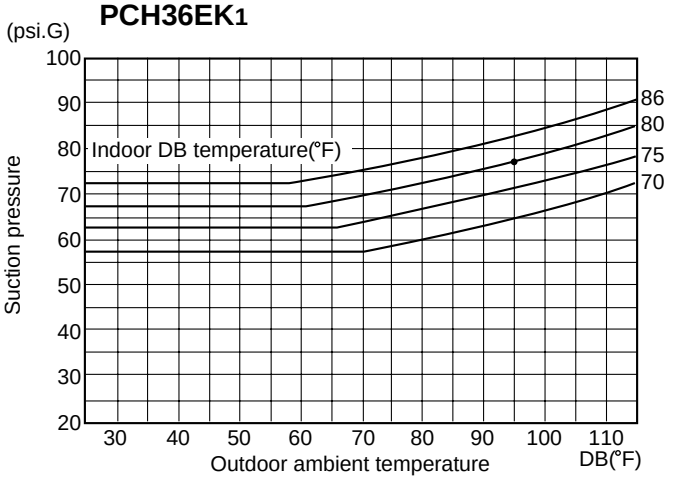
Data is based on the condition of indoor humidity 50%.
Air flow should be set at HI.
A point on the curve shows the reference point.

< Cooling mode>

PCH36EK1



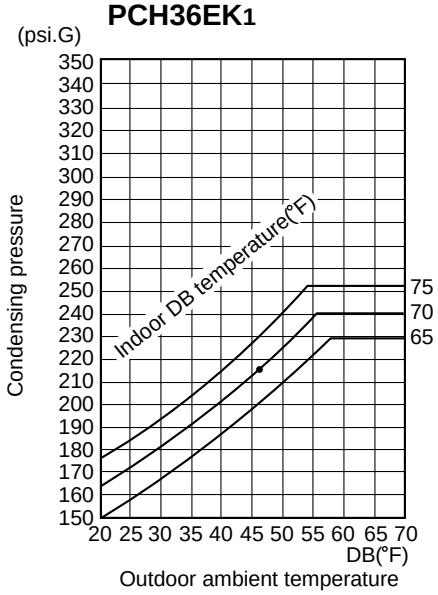
PCH36EK1



Data is based on the condition of outdoor humidity 75%.
A point on the curve shows the reference point.

< Heating mode>

PCH36EK1



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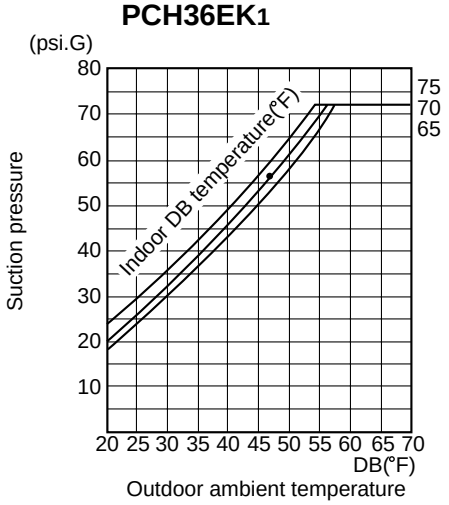
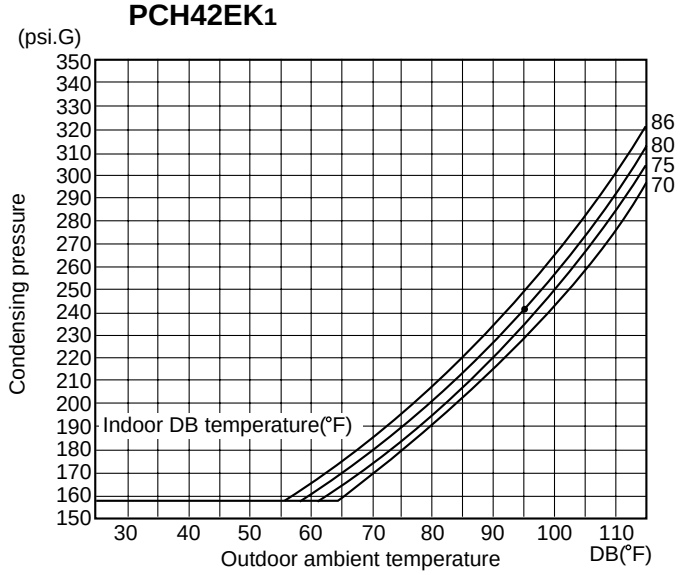


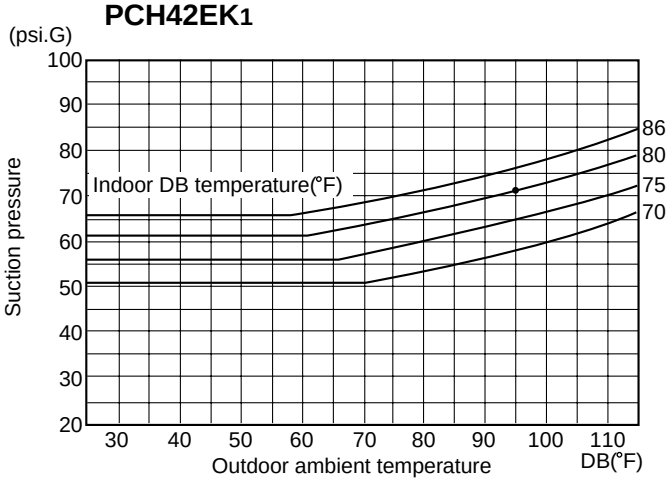
Data is based on the condition of indoor humidity 50%.
Air flow should be set at HI.
A point on the curve shows the reference point.

< Cooling mode>

PCH42EK1



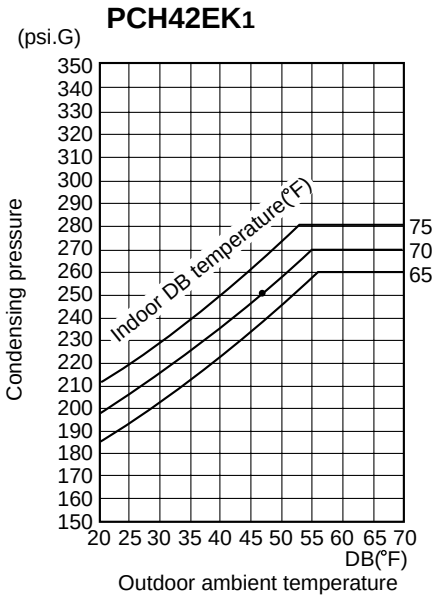
PCH42EK1



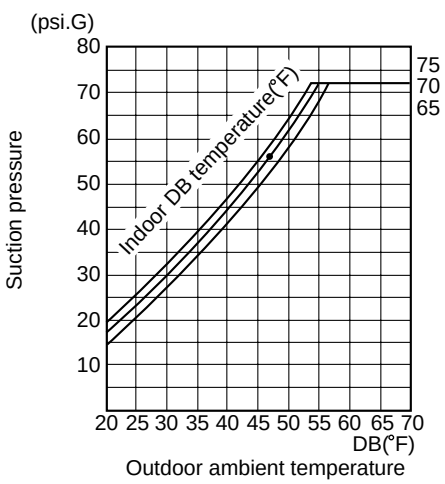
Data is based on the condition of outdoor humidity 75%.
A point on the curve shows the reference point.

< Heating mode>

PCH42EK1



PCH42EK1



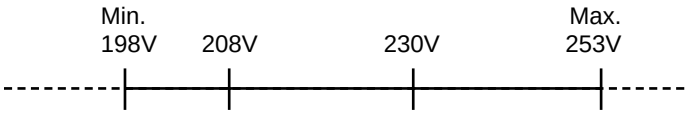
4. STANDARD OPERATION DATA

Models				PCH24EK1		PCH30EK1		PCH36EK1		PCH42EK1	
Item			Unit	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating
Electrical circuit	Voltage		V	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Frequency		Hz	60		60		60		60	
	Total input		kW	2.46	2.42	3.06	3.13	3.53	3.4	4.37	4.3
	Indoor fan current		A	0.7	0.7	0.7	0.7	1.3	1.3	1.3	1.3
	Booster heater current		A	—	7.6/8.4	—	9.8/10.8	—	10.8/12.0	—	10.8/12.0
	Outdoor fan current		A	0.65+0.65	0.65+0.65	0.75+0.75	0.75+0.75	0.75+0.75	0.75+0.75	0.8+0.8	0.8+0.8
	Comp. current		A	11.3/10.4	10.9/10.2	14.0/13.3	14.3/13.5	16.1/14.3	14.7/14.0	21.0/19.1	19.5/18.7
Refrigerant circuit	Condensing pressure		psi.G	245	236	232	243	235	216	240	252
	Suction pressure		psi.G	81	60	76	58	77	58	71	56
	Discharge temperature		˚F	176	168	158	168	164	160	181	175
	Condensing temperature		˚F	116	113	112	115	113	107	114	118
	Suction temperature		˚F	58	35	48	35	48	34	51	33
	Comp.shell bottom temperature		˚F	165	153	149	156	154	149	171	160
	Ref. pipe length		ft	25		25		25		25	
	Refrigerant charge		—	9 lbs 15 oz		10 lbs 2 oz		10 lbs 9 oz		12 lbs 9 oz	
Indoor side	Intake air temperature	DB	˚F	80	70	80	70	80	70	80	70
		WB	˚F	67	60	67	60	67	60	67	60
	Discharge air temperature	DB	˚F	59	98	55	105	58	100	55	106
		WB	˚F	57	—	54	—	57	—	54	—
	Fan speed		r.p.m.	1,485	1,470	1,485	1,470	1,505	1,480	1,505	1,480
	Airflow (High)		CFM	830	920	830	920	1,100	1,270	1,100	1,270
Outdoor side	Intake air temperature	DB	˚F	95	47	95	47	95	47	95	47
		WB	˚F	—	43	—	43	—	43	—	43
	Fan speed upper/lower		r.p.m.	750/750		760/760		760/760		840/840	
	Airflow		CFM	3,170		3,350		3,350		3,530	
Capacity			Btu/h	24,000	27,000	30,000	33,000	35,400	38,000	42,000	45,000
SHF			—	0.73	—	0.68	—	0.73	—	0.67	—

5. OPERATING RANGE

1) POWER SUPPLY

1 Phase 60Hz 208/230V
Guaranteed voltage range



2) OPERATION

Function	Air intake temperature / Condition	Indoor		Outdoor	
		DB(˚F)	WB(˚F)	DB(˚F)	WB(˚F)
Cooling	Standard temperature	80	67	95	75
	Maximum temperature	95	71	115	—
	Minimum temperature	67	57	23	—
	Maximum humidity	80	75	80	75
Heating	Standard temperature	70	60	47	43
	Maximum temperature	80	67	75	65
	Minimum temperature	70	60	17	15

6. OUTLET AIR SPEED AND COVERAGE RANGE

Model	Airflow (CFM)	Air speed (ft/sec)	Coverage range(ft)
PCH24EK1	920	15.0	38
PCH30EK1	920	15.0	38
PCH36EK1	1,270	16.5	48
PCH42EK1	1,270	16.5	48

The air coverage range is the value up to the position where the air speed is 0.8ft/sec. when air is blown out horizontally from the unit at the High notch position. The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture installed inside the room.

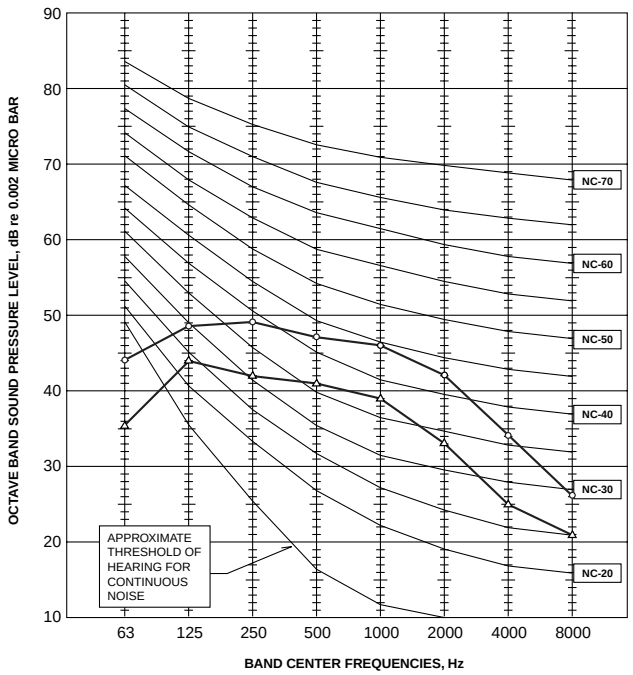
7. ADDITIONAL REFRIGERANT CHARGE (R22(oz))

Model	Outdoor unit precharged (up to 100ft)	Refrigerant piping length (one way)									
		25ft	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft
PCH24EK1	9 lbs 15 oz	0	0	0	0	0	0	2	4	7	9
PCH30EK1	10 lbs 2 oz	0	0	0	0	0	0	5	10	16	20
PCH36EK1	10 lbs 9 oz	0	0	0	0	0	0	5	10	16	20
PCH42EK1	12 lbs 9 oz	0	0	0	0	0	0	5	10	16	20

8. NOISE CRITERION CURVES

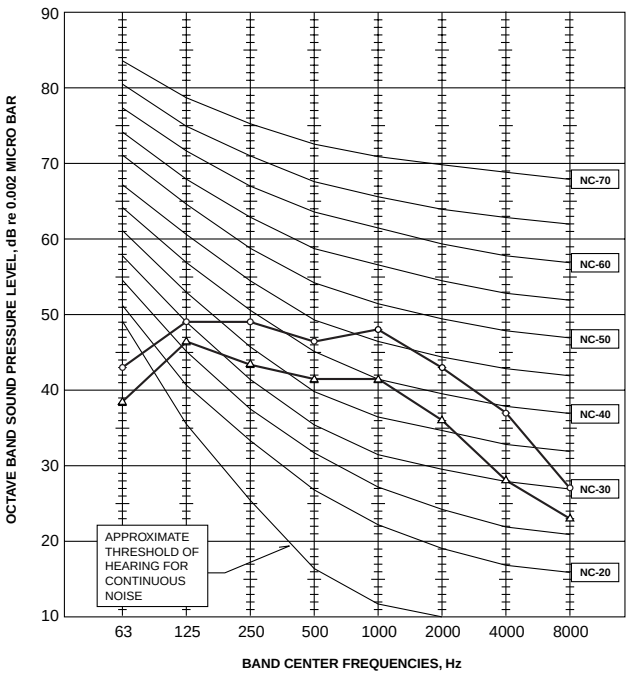
PCH24EK1
PCH30EK1

NOTCH	SPL(dB)	LINE
Hi	50	○——○
Lo	43	△——△



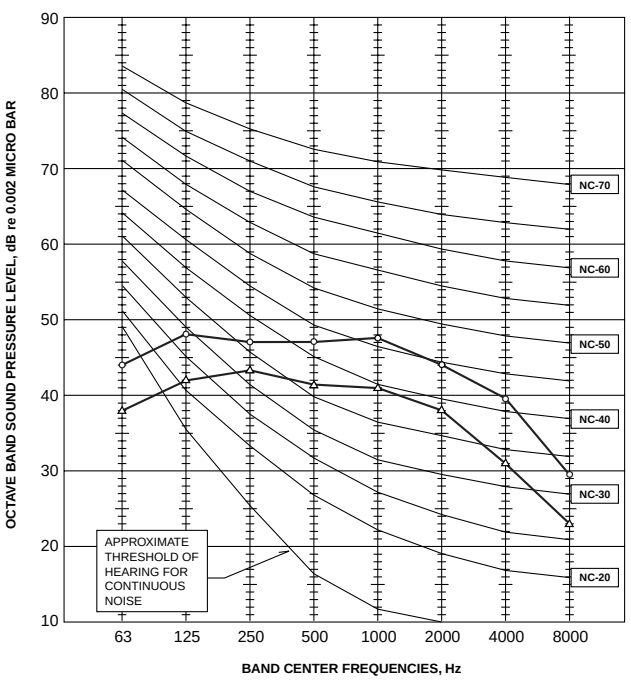
PCH36EK1

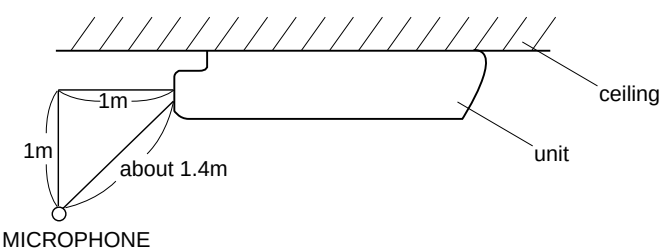
NOTCH	SPL(dB)	LINE
Hi	51	○——○
Lo	45	△——△



PCH42EK1

NOTCH	SPL(dB)	LINE
Hi	51	○——○
Lo	45	△——△





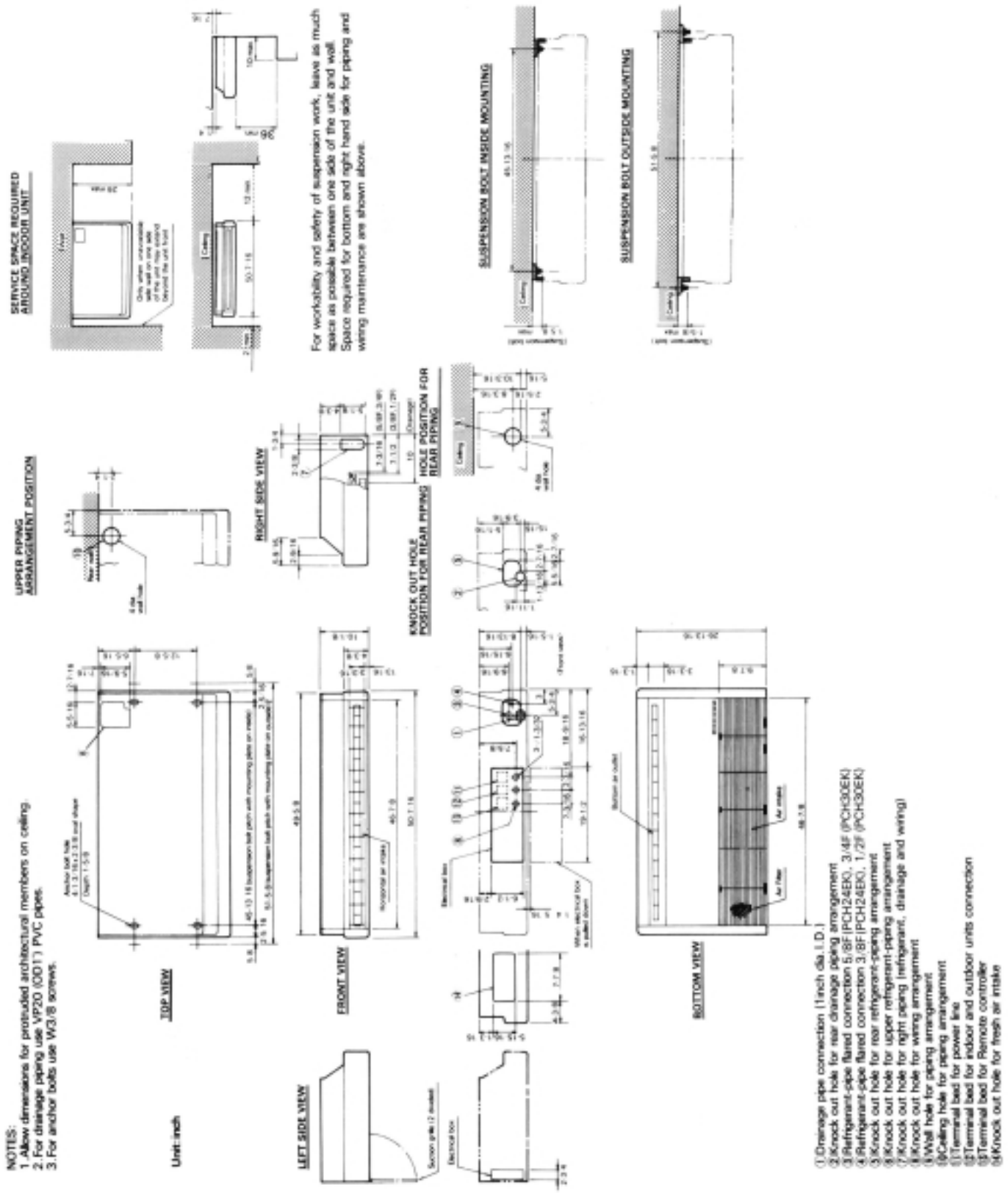
Ambient temperature 27˚C

Test conditions are based on JIS Z8731

6 OUTLINES AND DIMENSIONS

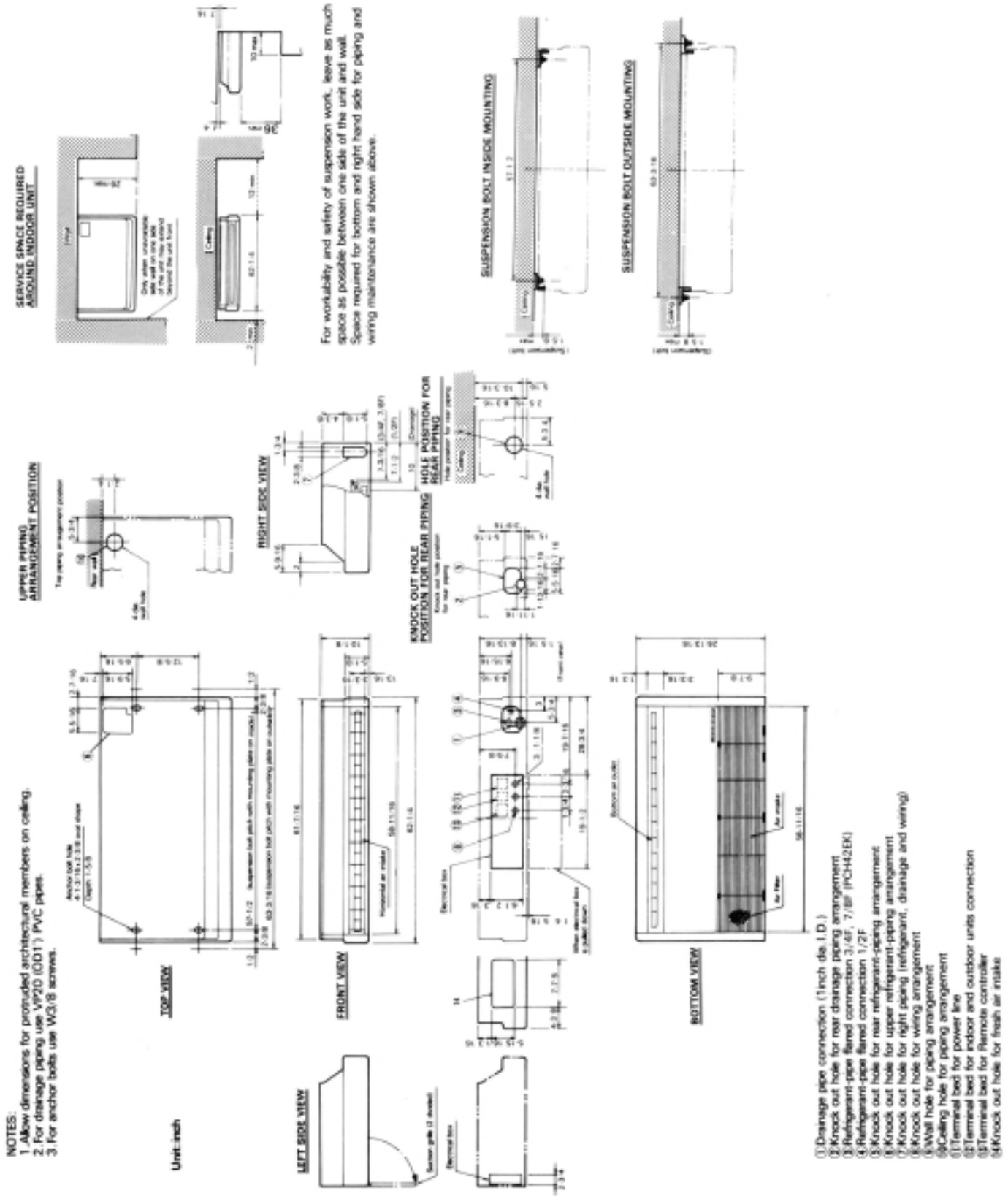
Indoor unit PCH24/30EK1

Unit:inch



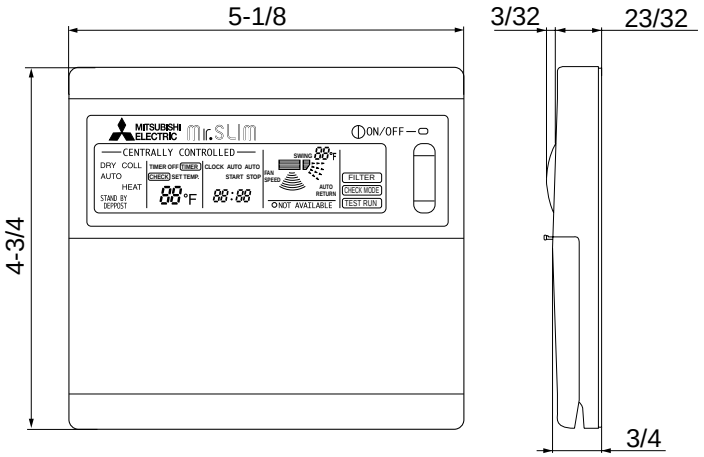
Indoor unit PCH36/42EK1

Unit:inch



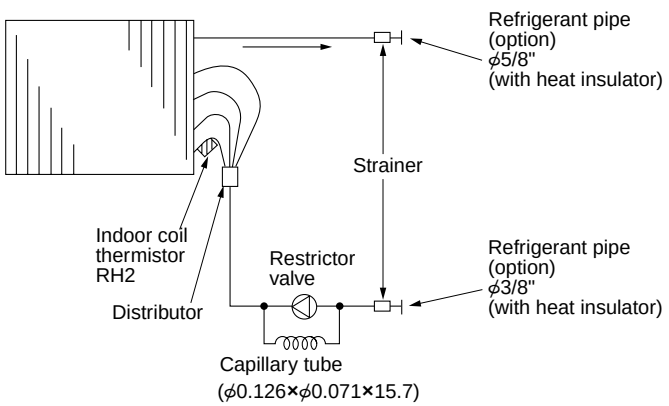
Remote controller

Unit : inch

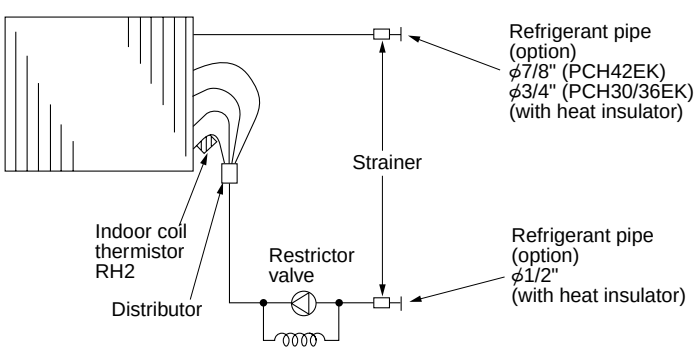


7 REFRIGERANT SYSTEM DIAGRAM

PCH24EK1



PCH30/36/42EK1

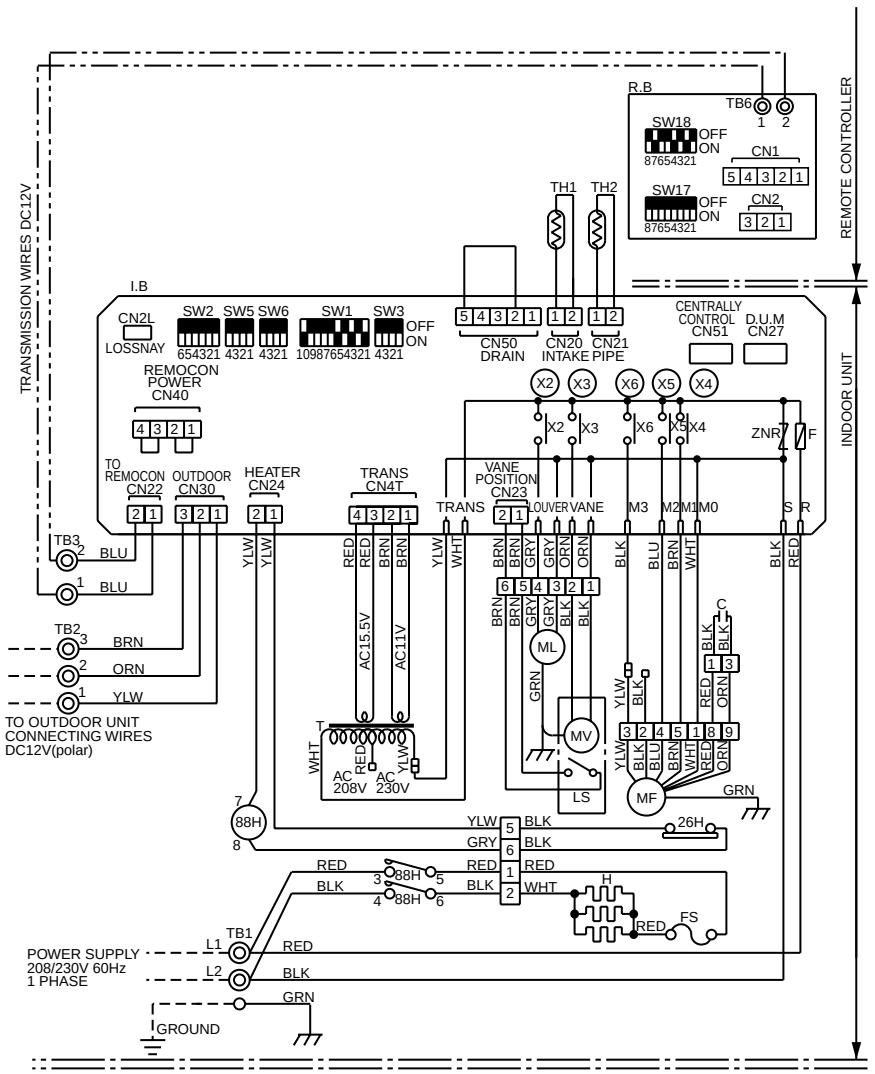


PCH30EK1 (ϕ0.157×ϕ0.070×15.7)
PCH36EK1 (ϕ0.157×ϕ0.094×21.7)
PCH42EK1 (ϕ0.157×ϕ0.094×25.6)

10 WIRING DIAGRAM

MODEL PCH24EK1 WIRING DIAGRAM

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	FAN MOTOR CAPACITOR	ML	LOUVER MOTOR	SW17<R.B>	ADDRESS SELECTOR SWITCH
CN1<R.B>	PROGRAM TIMER CONNECTOR	MV	VANE MOTOR	SW18<R.B>	FUNCTION SELECTOR SWITCH
CN2<R.B>	REMOTE SWITCH CONNECTOR	R.B	REMOTE CONTROLLER BOARD	T	TRANSFORMER
CN27<I.B>	DRAIN UP MECHA. CONNECTOR	TH1	ROOM TEMPERATURE	TB1~6	TERMINAL BLOCK
CN51<I.B>	CENTRALLY CONTROL CONNECTOR		THERMISTOR(32˚F/15kΩ, 77˚F/5.4kΩ)	X2<I.B>	LOUVER MOTOR RELAY
CN2L<I.B>	LOSSNAY CONNECTOR	TH2	PIPE TEMPERATURE	X3<I.B>	VANE MOTOR RELAY
F<I.B>	FUSE (6A)		THERMISTOR(32˚F/15kΩ, 77˚F/5.4kΩ)	X4<I.B>	FAN MOTOR RELAY
FS	THERMAL FUSE (196˚F 15A)	SW1<I.B>	MODEL SELECTOR SWITCH	X5<I.B>	FAN MOTOR RELAY
H	HEATER ELEMENT	SW2<I.B>	ADDRESS SELECTOR SWITCH	X6<I.B>	FAN MOTOR RELAY
I.B	INDOOR CONTROLLER BOARD	SW3<I.B>	EMERGENCY OPERATION SWITCH	ZNR	VARISTOR
LS	LIMIT SWITCH	SW5<I.B>	MODEL SELECTOR SWITCH	26H	HEATER THERMAL SWITCH
MF	FAN MOTOR (INNER THERMOSTAT)	SW6<I.B>	MODEL SELECTOR SWITCH	88H	HEATER CONTACTOR



NOTES:

1.Since the indoor transformer (T) is connected with 230V power, if 208V power is used, change the wiring connection in the following procedure.

Indoor side transformer (T) for 208V	YELLOW	208V	RED
		230V	YELLOW
Indoor fan (MF) for 208V	BLACK	208V	BLACK
		230V	YELLOW

2.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.

3.Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal.

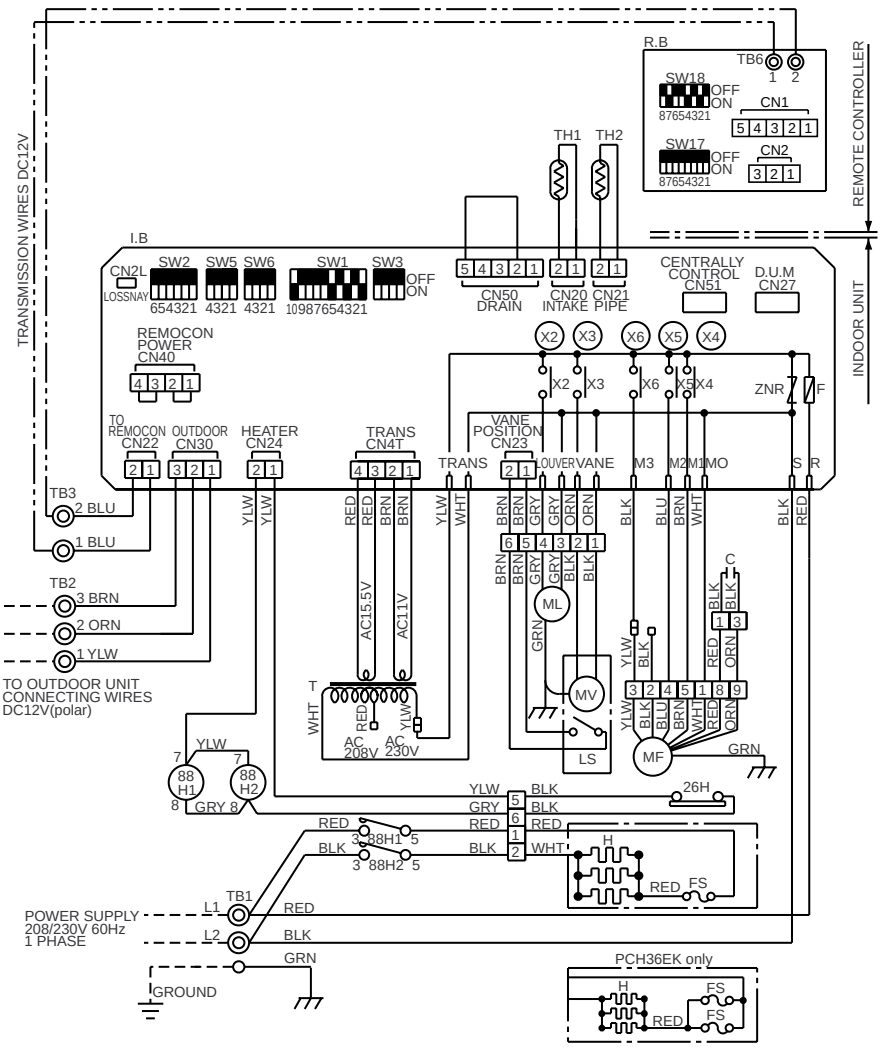
4.Symbols used in wiring diagram above are, ◎:Terminal block, □□□□:connector, □:PC board insertion tab.

5.Emergency operation

If a trouble occurs with either the remote controller or the indoor microcomputer and no other trouble exists, emergency operation for cooling or heating can be performed by changing the setting of dip switch (SW3(I.B)) on the indoor controller board (emergency dry operation is not possible).

MODELS PCH30EK1 PCH36EK1 PCH42EK1 WIRING DIAGRAM

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	FAN MOTOR CAPACITOR	LS	LIMIT SWITCH	SW6<I.B>	MODEL SELECTOR SWITCH
CN1<R.B>	PROGRAM TIMER CONNECTOR	MF	FAN MOTOR (INNER THERMOSTAT)	SW17<R.B>	ADDRESS SELECTOR SWITCH
CN2<R.B>	REMOTE SWITCH CONNECTOR	ML	LOUVER MOTOR	SW18<R.B>	FUNCTION SELECTOR SWITCH
CN27<I.B>	DRAIN UP MECHA CONNECTOR	MV	VANE MOTOR	T	TRANSFORMER
CN51<I.B>	CENTRALLY CONTROL CONNECTOR	R.B	REMOTE CONTROLLER BOARD	TB1~6	TERMINAL BLOCK
CN2L<I.B>	LOSSNAY CONNECTOR	TH1	ROOM TEMPERATURE	X2<I.B>	LOUVER MOTOR RELAY
F<I.B>	FUSE (6A)		THERMISTOR(32˚F/15kΩ, 77˚F/5.4kΩ)	X3<I.B>	VANE MOTOR RELAY
FS	THERMAL FUSE (219˚F 10A)	TH2	PIPE TEMPERATURE	X4<I.B>	FAN MOTOR RELAY
	(PCH36EK)		THERMISTOR(32˚F/15kΩ, 77˚F/5.4kΩ)	X5<I.B>	FAN MOTOR RELAY
FS	THERMAL FUSE (230˚F 16A)	SW1<I.B>	MODE SELECTOR SWITCH	X6<I.B>	FAN MOTOR RELAY
	(PCH30EK)(PCH42EK)	SW2<I.B>	ADDRESS SELECTOR SWITCH	ZNR	VARISTOR
H	HEATER ELEMENT	SW3<I.B>	EMERGENCY OPERATION SWITCH	26H	HEATER THERMAL SWITCH
I.B	INDOOR CONTROLLER BOARD	SW5<I.B>	MODEL SELECTOR SWITCH	88H1,2	HEATER CONTACTOR



NOTES:

1.Since the indoor transformer (T) is connected with 230V power, if 208V power is used, change the wiring connection in the following procedure.

Indoor side transformer (T) for 208V	YELLOW	208V	RED
		230V	YELLOW
Indoor fan (MF) for 208V	BLACK	208V	BLACK
		230V	YELLOW

2.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.

3.Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal.

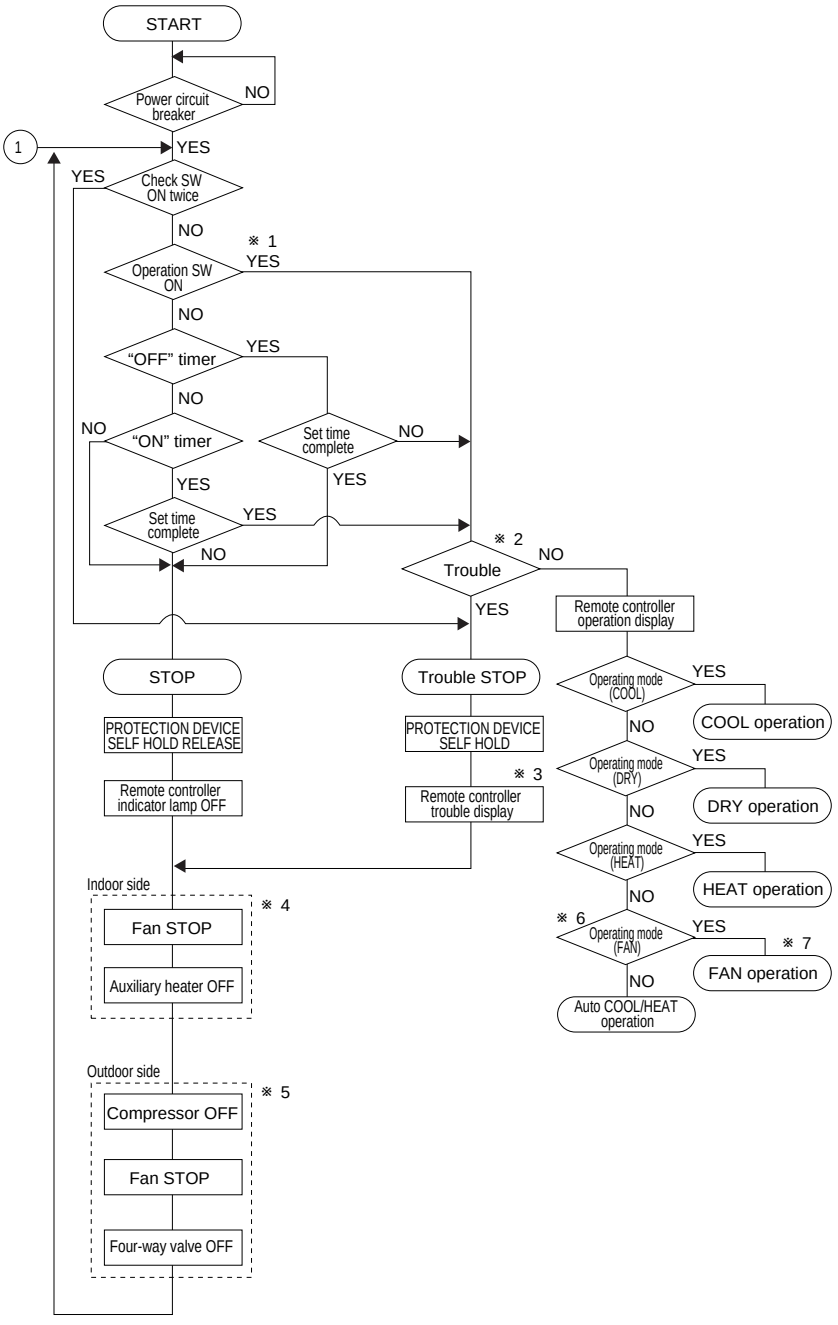
4.Symbols used in wiring diagram above are, ⓞ:Terminal block, □□□□:connector, □:PC board insertion tab.

5.Emergency operation

If a trouble occurs with either the remote controller or the indoor microcomputer and no other trouble exists, emergency operation for cooling or heating can be performed by changing the setting of dip switch (SW3(I.B)) on the indoor controller board (emergency dry operation is not possible).

9 OPERATION FLOW-CHART

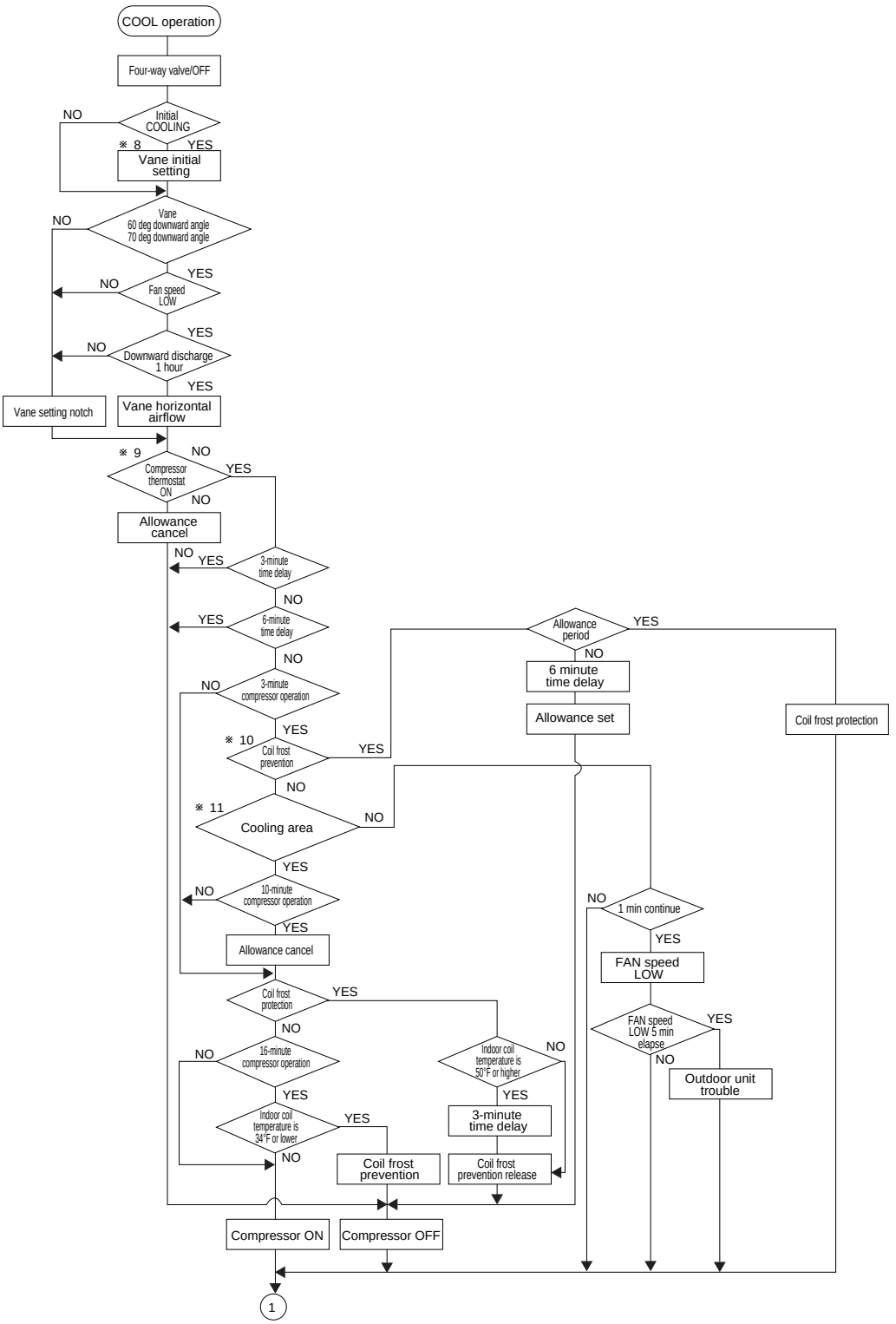
MAIN OPERATION



※1 In addition, the centralized and remote control can be operated.
※2 The modes which indicate the sources of trouble are listed below.
- EO=Signal transmitting/receiving error
- P1=Room temperature thermistor malfunction
- P2=Indoor coil thermistor malfunction
- P4=Drain sensor malfunction
- P5=Drain over flow
- P6=Coil frost/overheat protection
- P7=System error
- P8=Outdoor unit trouble

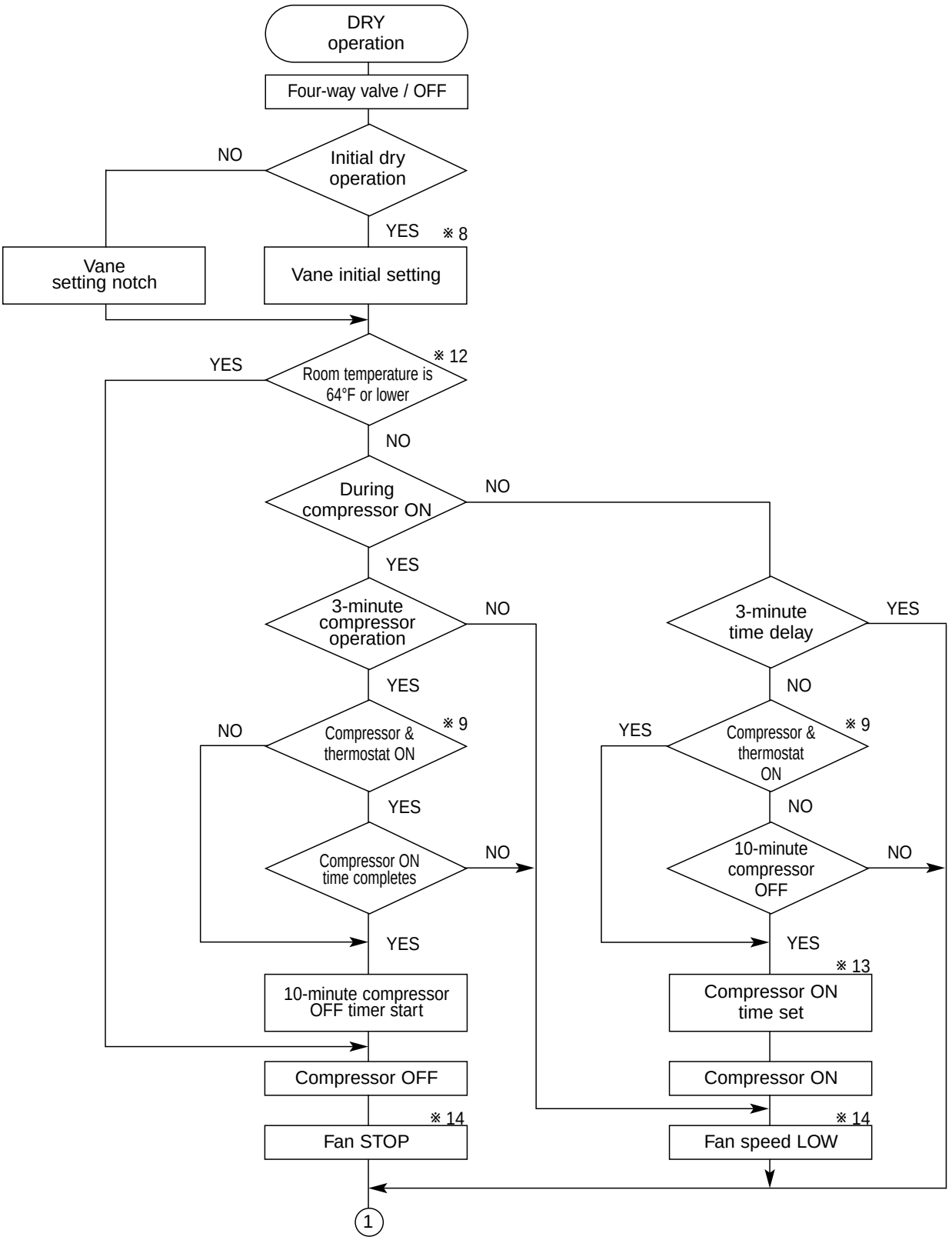
※3 The CHECK switch will show if an error has occurred in the past.
※4 Fan runs on low speed for 1 minute in order to remove overheat air.
※5 The 3-minute (6 minutes ··· heating mode) time-delay functions after compressor stops.
※6 FAN or AUTO mode is selected by the indoor dip switch setting.
※7 In FAN mode, fan speed and vane operation depend on the remote controller setting. (Compressor is OFF.)

COOLING OPERATION



※8 When operation stops or changes to cooling or dry mode, the auto vane turns to a horizontal angle. If operation changes during auto vane SWING, the auto vane will continue to swing.
※9 When operating TEST RUN, the thermostat will be continuously ON.
※10After 3 minute compressor operation, if the indoor coil thermistor reads 5°F or below for 3 minutes, the compressor will stop for 6 minutes.
※11Cooling area : Indoor coil temperature is more than 9 degrees above the room temperature.
Heating area : Indoor coil temperature is more than 9 degrees below the room temperature.
FAN area : Indoor coil temperature is within 9 degrees either way of the room temperature.

DRY OPERATION



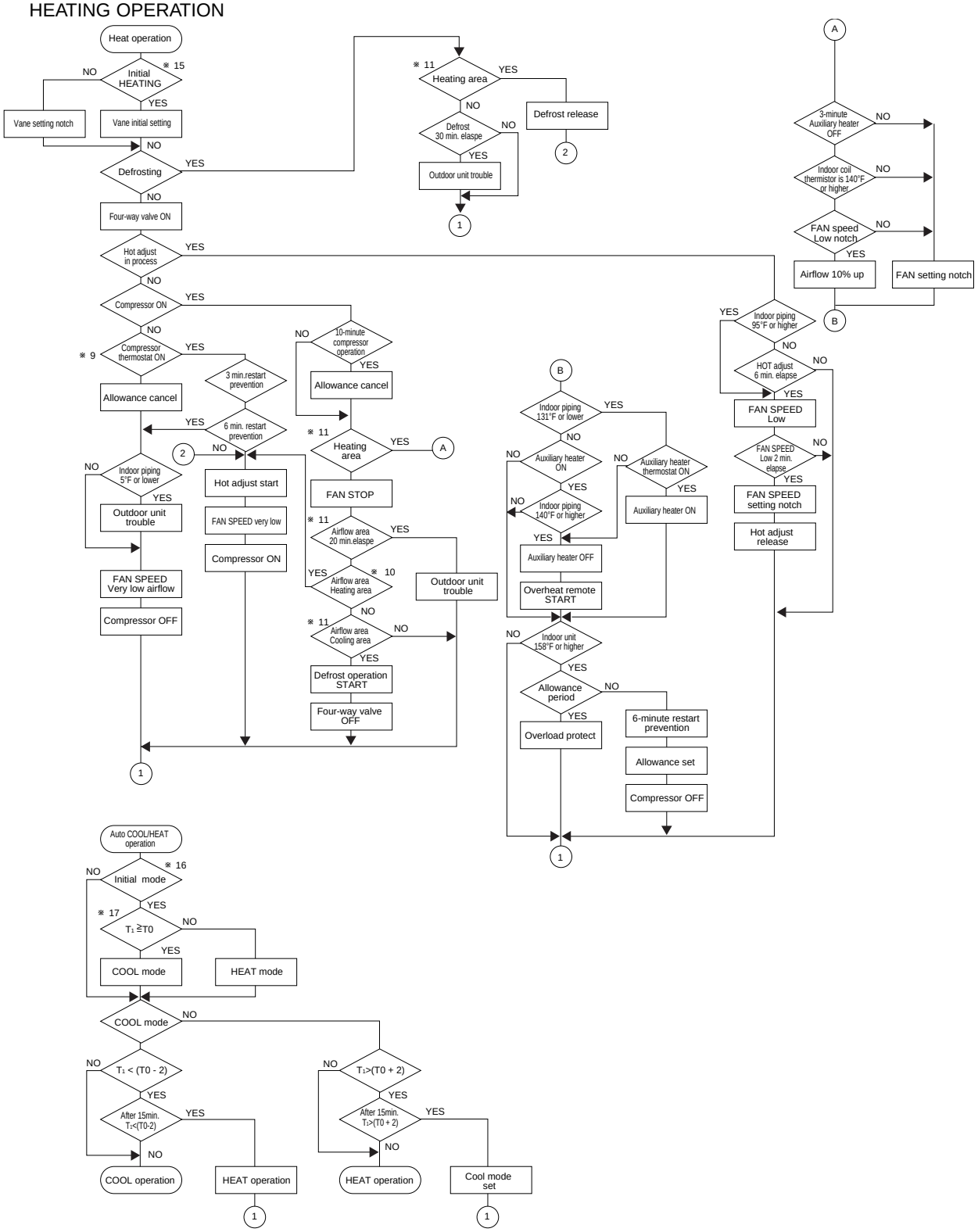
※8 ~ 9 Refer to page OC193-26.

※12 When room temperature is 64°F or below, the compressor cannot operate.
When room temperature rises over 64°F, the compressor starts after a 3-minute time delay.

※13 Compressor ON time is decided by room temperature. Refer to page OC193-33.

※14 In dry operation, compressor ON makes the fan speed LOW and compressor OFF stops the fan.
It is not possible to set the fan speed with the remote controller

HEATING OPERATION



※15 (i) Until Low airflow is set while hot adjustment
(ii) While defrosting (FAN STOP)
(iii) When thermostat is OFF
In the case of(i), (ii) and (iii) above, airflow is horizontal regardless the VANE setting.
※16 When AUTO operation is started, COOL or HEAT mode is selected automatically.
※17 T1 : Room temperature.
To : Set temperature

8 MICROPROCESSOR CONTROL

1.OUTLINE OF MICROPROCESSOR CONTROL

INPUT to remote controller

- OFF-ON switching.
- COOL/DRY-AUTO-HEAT selector switching.
- Thermostat setting.
- TIMER mode selector-switching and Timer setting.
- HIGH-LOW fan speed switching.
- AUTO Vane selector (AIR DISCHARGE) switching.
- Swing louver switching.(AIR SWEEP)
- TEST RUN switching.
- CHECK mode switching. (Self diagnostic trouble shooting)

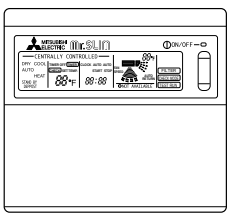
Remote controller board

- Processes and transmits orders.

OUTPUT to remote controller

Remote controller

- LCD indicator



12VDC

Non-polar, two-wire cable maximum length 550 yards

Signal

INPUT from indoor unit

- Room temperature thermistor (TH1)
- Pipe temperature thermistor (TH2)

Indoor controller board

- Receives orders from remote controller and temperature data from indoor unit.
- Processes orders and data.
- Controls indoor and outdoor operation.
- Self diagnostic function.
- ※ System control operation.
- ※ Emergency operation.
- ※ Set by dip switch on indoor controller board.
- Transmits the power to remote controller.

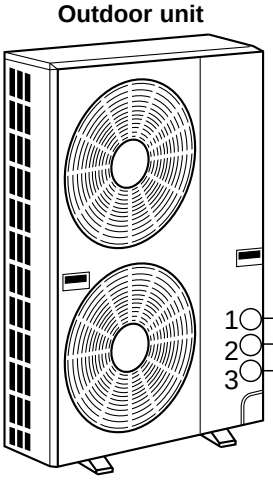
1 2 3

Polar three-wire cable

OUTPUT to indoor unit

- Auto vane's angle setting.
- Swing louver control ON-OFF.
- Booster heater ON-OFF Control.
- Emergency stop.

Outdoor unit



12VDC

1
2
3

OUTPUT to outdoor unit

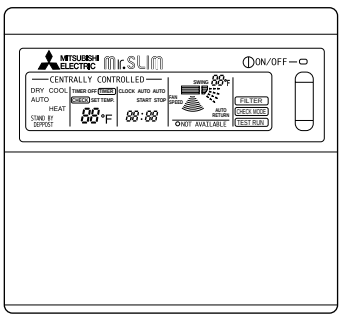
- Compressor and outdoor fan : ON-OFF
- Operation mode change :COOL-HEAT.

Independent Control of Outdoor Unit

- Compressor protection device working
- Defrosting START-STOP
- Fan speed control.
- Crankcase heater control ON-OFF.
- Self diagnostic function

2. INDOOR UNIT CONTROL

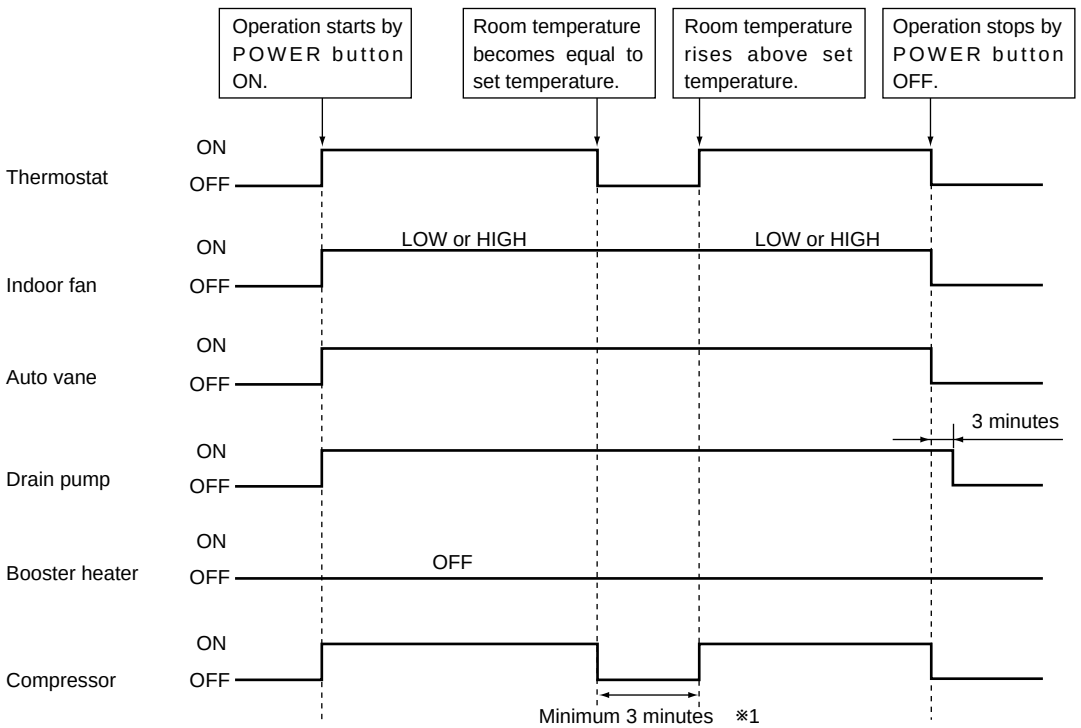
2-1 COOL operation



<How to operate>

① Press POWER ON/OFF button.
② Press the MODE button to display COOL.
③ Press the SET TEMP. button to set the desired temperature.
NOTE: Set temperature changes 2°F when the SET TEMP. button is pressed one time.
Cooling 65 to 87°F.

<COOL operation time chart>



※1 Even if the room temperature rise above the set temperature during this period, the compressor will not start until this period has ended.

(1) Compressor control

① 3-minute time delay
To prevent overload, the compressor will not start within 3 minutes after stop.
② The compressor runs when room temperature is higher than set temperature.
The compressor stops when room temperature is equal to or lower than the set temperature.
The compressor maintains the previous state when the room temperature minus the set temperature is 0 degrees or more, or lower than 2 degrees.
③ The compressor stops in check mode or during protective functions.
④ Coil frost prevention
To prevent indoor coil frost, the compressor will stop when the indoor coil thermistor (RT2) reads 34°F or below after the compressor has been continuously operated for at least 16 minutes or more. When the indoor coil temperature rises to 50°F or above, the compressor will start in a 3-minute(※2) time delay.
※2 When the indoor coil temperature is 30°F or less, the compressor starts in 6 minutes.

NOTE : By turning OFF the dip switch SW1-3 on indoor controller board, the start temperature of coil frost prevention changes from 34°F to 36°F.

⑤ Coil frost protection

When indoor coil temperature becomes 5°F or below,coil frost protection will proceed as follows.

<Start condition>

After the compressor has been continuously operated for 3 minutes or more,and the indoor coil temperature has been 5°F or below for 3 minutes,the coil frost protection will start.

<Coil frost protection>

Compressor stops for 6 minutes,and then restarts.

If the start condition is satisfied again during the first 10 minutes of compressor operation,both the indoor and outdoor units stop,displaying a check code of "P6" on the remote controller.

<Termination conditions>

Coil frost protection is released when the start condition is not satisfied again during the allowance, or when the COOL mode stops or changes to another mode.

(2) Indoor fan control

Indoor fan speed LOW/HIGH depends on the remote controller setting.

However, if an outdoor unit abnormality is detected, the indoor fan speed will be LOW, regardless of the remote controller setting.

(i) Fan speed LOW/HIGH depends on the remote controller setting regardless of the thermostat ON/OFF.

(ii) Fan speed will remain on LOW if an abnormality in outdoor unit is detected. (5 minutes)

NOTE : Fan stops immediately if the unit stops or the check mode is started.

(3) Auto vane control

(i) Frequency judgement

When the unit operates for the first time after the circuit breaker turned to ON, the frequency, 50Hz or 60Hz, is judged by the horizontality sensing switch. If the frequency cannot be judged immediately for some reason, the sensing operation continues for 10 minutes with the vane motor at ON.

If the frequency cannot be judged yet after 10-minute sensing, the vane motor turns to OFF. But the AIR DISCHARGE DIRECTION display continues to be indicated.

(ii) During cooling operation

When the cooling operation starts, the horizontal discharge is automatically set. However, the desired discharge among four modes below-listed can be selected with the AIR DISCHARGE UP/DOWN button on the remote controller.

①100%-horizontal discharge
②60%-downward and 40%-horizontal discharge
③80%-downward and 20%-horizontal discharge
④100%-downward discharge

NOTE: Discharge ② is available only when the fan speed is HIGH.

<AUTO RETURN>

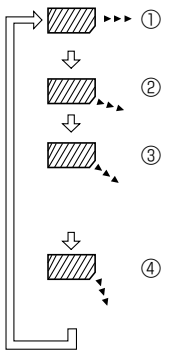
When discharge "③" or "④" continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

NOTE1: After that, the discharge "③" or "④" is available by setting with the remote controller, and it continues for 1 hour.

NOTE2: If the discharge direction changes from "③" or "④", the direction returns to the horizontal discharge when 1 hour has passed since the discharge "③" started.

NOTE3: If the discharge direction changes from "③" (or "④") to the horizontal discharge, the 1-hour timer to return the horizontal discharge is canceled at that time.

<Remote controller display>



Changes by pushing the AIR DISCHARGE UP/DOWN button:

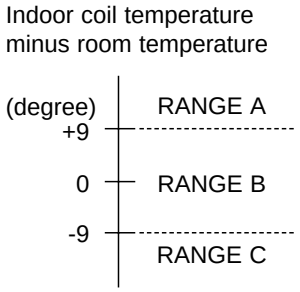
(iii) During the operation OFF, the auto vane is in the horizontal position.

(iv) When the vane motor is out of order or the connector is badly connected, the air discharge display of the remote controller continues.

(4) Detecting abnormalities in the outdoor unit

After the compressor has been continuously operated for 3 minutes, if the difference between the indoor coil temperature and room temperature is out of RANGE C for 1 minute, the indoor fan speed will turn to LOW. Five minutes later, if the difference is still out of RANGE C,the outdoor unit is functioning abnormally. Thus, the compressor stops and check code "P8" appears on remote controller.

RANGE A : Indoor coil temperature is more than 9 degrees above room temperature.
RANGE B : Indoor coil temperature is within 9 degrees either way of room temperature.
RANGE C : Indoor coil temperature is more than 9 degrees below room temperature.



(5) Drain pump control

The drain pump works in COOL or DRY operation. When operation stops or changes to HEAT mode, the drain pump continues to operate for 3 more minutes. The drain pump does not work in check mode.

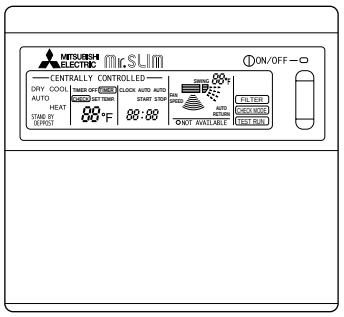
<Drain sensor>

When both the drain pump and unit are operating, the drain sensor detects the temperature. This temperature tells whether the drain water level is above or under the drain sensor. If the drain water level rises above the drain sensor due to a drain pump malfunction, the unit will stop operating in order to prevent drain from overflowing. The check code "P5" on the remote controller will display this occurrence.

(6) Dew prevention heater

To prevent dew from accumulating on the grille, the dew prevention heater is continuously ON during COOL operation. It is independent of the thermostat ON/OFF.

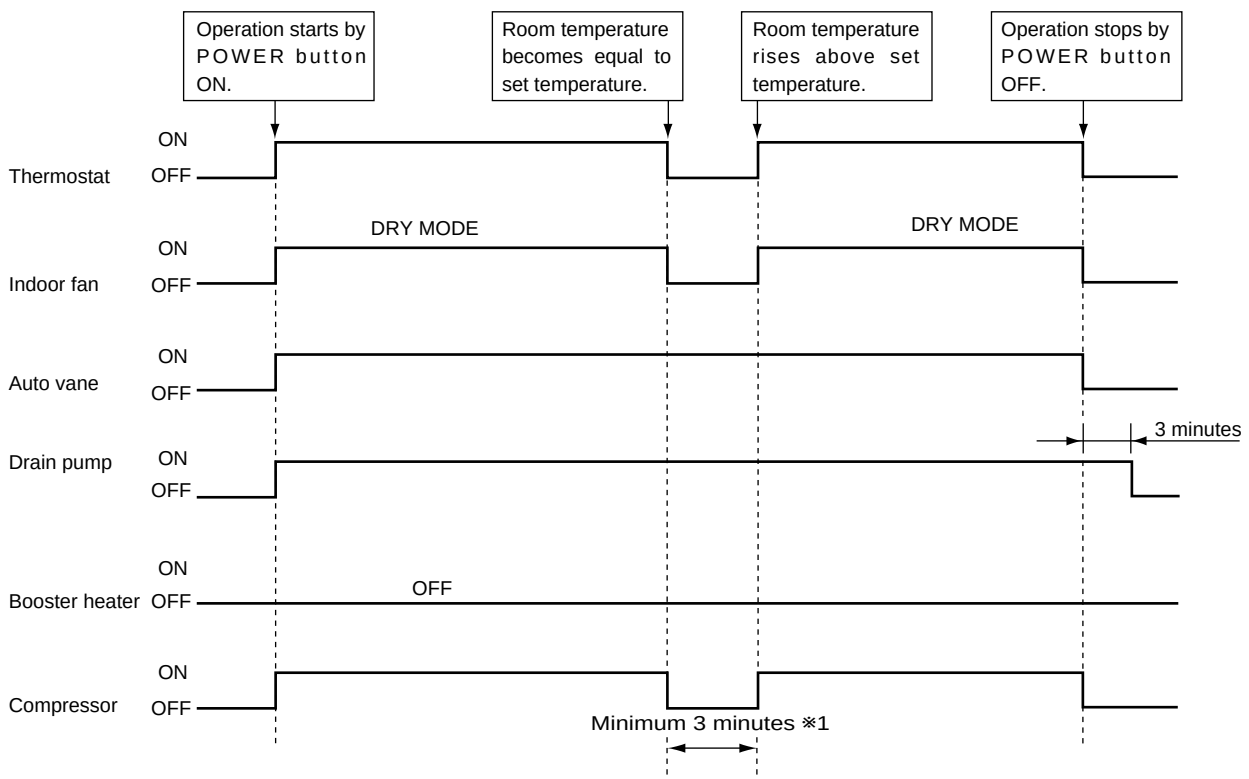
2-2 DRY operation



<How to operate>

① Press POWER ON/OFF button.
② Press the MODE button to display “DRY”
③ Press the SET TEMP. button to set the desired temperature.
NOTE: The set temperature changes 2°F when the SET TEMP. button is pressed one time.
Dry 64 to 86°F

<DRY operation time chart>



※1 Even if the room temperature rises above the set temperature during this period, the compressor will not start until this period has ended.

(1) Compressor control

① 3-minute time delay
To prevent overload, the compressor will not start within 3 minutes after stop.
② The compressor runs when room temperature is higher than set temperature.
The compressor stops when room temperature is equal to or lower than the set temperature.
The compressor maintains the previous state when the room temperature minus the set temperature is 0°F or more, or lower than 2°F.
③ The compressor stops in check mode or during protective functions.

④The compressor will not start when the room temperature is 64°F or below.
The compressor starts intermittent operation when the power is turned ON with room temperature above 64°F. The compressor ON/OFF time depends on the thermostat ON/OFF and the following room temperatures.After 3-minute compressor operation,

- If the room temperature thermistor reads above 85°F with thermostat ON, the compressor will operate for 6 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads 79°F~82°F with thermostat ON, the compressor will operate for 4 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads 75°F~79°F with thermostat ON, the compressor will operate for 2 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads below 75°F with thermostat ON, the compressor will stop for 3 minutes.
- If the thermostat is OFF regardless of room temperature, the compressor will stop for 10 minutes.

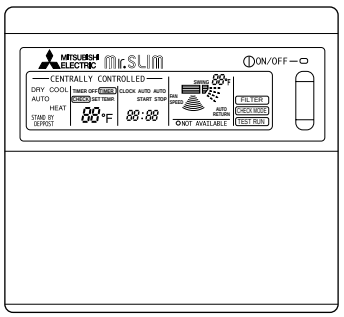
⑤Coil frost protection
Coil frost protection in DRY operation is the same as in COOL operation.
⑥Coil frost prevention
Coil frost prevention does not operate in DRY operation.

(2) Indoor fan control
The indoor fan runs on LOW speed during compressor operation. The fan speed cannot be changed with the remote controller. Also, the indoor fan does not run during compressor OFF.

(3) Auto vane & drain pump controls
Same as in COOL operation

(4) Detecting abnormalities in the outdoor unit
An abnormality in the outdoor unit can not be detected in DRY operation.

2-3 HEAT operation



<How to operate>

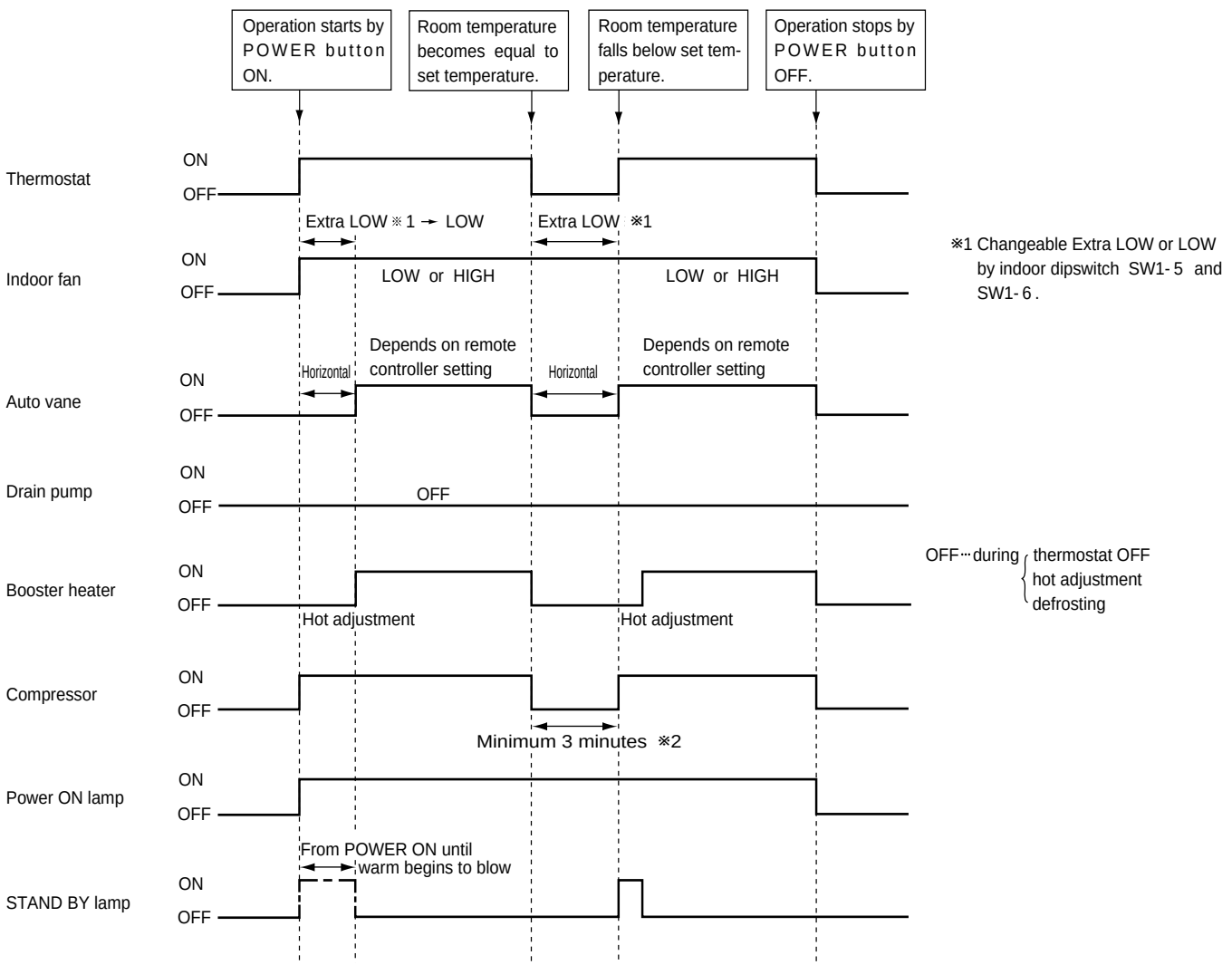
① Press POWER ON/OFF button.
② Press the MODE button to display “HEAT”
③ Press the SET TEMP. button to set the desired temperature.
NOTE: The set temperature changes 2°F when the SET TEMP. button is pressed one time.
Heating 63 to 82°F.

<Display in HEAT operation>

[DEFROST]
The [DEFROST] symbol is only displayed during the defrost operation.

[STANDBY]
The [STANDBY] symbol is only displayed from the time the heating operation starts until the heated air begins to blow.

<HEAT operation time chart>



※2 Even if the room temperature falls below the set temperature during this period, the compressor will not start until this period has ended.

(1) Compressor control

①3-minute time delay

To prevent overload, the compressor will not start within 3 minutes after stop.

②The compressor runs when the room temperature is lower than the set temperature.

The compressor stops when the room temperature is equal to or higher than the set temperature.

③The compressor stops in check mode or during protective functions.

④Overheat protection

<Start condition>

When the indoor coil thermistor reads 158°F or above, the overheat protection will start.

<Overheat protection>

The compressor stops for 6 minutes, and then restarts.

If the start condition is satisfied again within 10 minutes of compressor operation, both the indoor and outdoor units stop, displaying a check code of “P6” on the remote controller.

<Termination conditions>

Overheat protection is terminated when the start condition is not satisfied again during the allowance (10-minute compressor operation), when operation mode changes to other mode, or when thermostat turns OFF.

(2) Indoor fan control

(a) Normal control

(i)The indoor fan runs on EXTRA-LOW speed during the thermostat OFF.

EXTRA-LOW speed can be changed to LOW or HIGH speed by setting the dip switch SW1-5 and SW1-6.

If the indoor coil temperature becomes more than 5 degrees below the room temperature during the thermostat OFF, the indoor fan will stop. After, when the indoor coil temperature becomes within 5 degrees of room temperature, the indoor fan will run on EXTRA-LOW speed.

(ii)Hot adjustment

Hot adjustment is a warm-up for HEAT operation

<Start conditions>

The hot adjustment works under any of the following conditions.

- HEAT operation starts.
- Defrosting ends.
- Thermostat turns ON.

[Hot adjustment]

Initially, the indoor fan runs on EXTRA-LOW speed. When 5 minutes have passed or the indoor coil temperature exceeds 95°F, the fan speed changes to LOW. 2 minutes later, the hot adjustment ends. Then, the fan speed depends on the remote controller setting.

(iii)The indoor fan stops when the indoor coil temperature is within 9 degrees either way of room temperature.

(iv)To eliminate the remaining heat, the indoor fan runs for the first 1 minute after the booster heater is turned OFF.

(3) Auto vane control

When the heating operation starts, the same discharge direction as was set last time is chosen automatically. However, the desired discharge can be selected from among four modes above-mentioned with the remote controller.

However, in the following cases, the discharge direction turns to the horizontal discharge despite the setting with the remote controller.

- When the thermostat turns to OFF
- During defrosting operation with the indoor fan stopped
- While the indoor fan operates at EXTRA LOW speed in the hot adjustment

(4) Booster heater control

When the room temperature is 6 degrees below the set temperature, the booster heater will turn ON.

When the room temperature is equal to the set temperature, booster heater will turn OFF.

During the hot adjustment, the booster heater will not work.

<Overheat prevention>

When the indoor coil thermistor rises to 140°F or above, the booster heater cannot work.

When the indoor coil thermistor falls to 131°F or below, the booster heater can work.

(5) Detecting abnormalities in the outdoor unit

When the outdoor unit is determined to be abnormal by the following causes, the compressor will stop and the check code " P8 " will appear on the remote controller display.

(i) During compressor ON while hot adjustment is set.

① If the difference between the indoor coil temperature and room temperature is in the RANGE B, the indoor fan will stop.

② Within 20 minutes after entering RANGE B (except for the first 10 seconds),

a) If the temperature difference enters RANGE A, the hot adjustment starts,

b) If the temperature difference is still in RANGE B, the outdoor unit is deemed abnormal.

c) If the temperature difference enters RANGE C, defrosting starts.

③ Within 20 minutes after entering RANGE C, if the temperature difference does not return to RANGE B,the outdoor unit is deemed abnormal.

④ If the temperature difference returns to RANGE B, the next 20 minutes is an allowance period. If the difference enter RANGE A during the allowance, defrosting ends and the hot adjustment starts. If the difference does not enter RANGE A during the allowance, the outdoor unit is deemed abnormal.

(ii) During compressor ON in defrosting

After 30 minutes of defrosting in hot adjustment, if the temperature difference is still in RANGE C, the outdoor unit is determined to be abnormal.

When RANGE B does not change to RANGE A after 20 minutes have passed since RANGE C had outdoor unit is determined to be abnormal.

(iii) During compressor OFF

Not detecting abnormalities.

(6) Indoor coil temperature abnormality detection

An abnormality can be detected during compressor ON, except for the following.

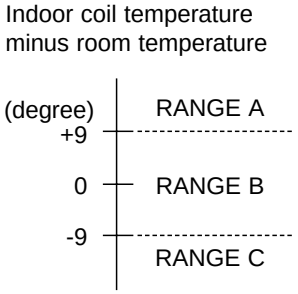
●For the first 30 minutes after the temperature difference between the indoor coil temperature and room temperature enters the RANGE C.

●When the temperature difference enters the RANGE C until it moves to the RANGE B.

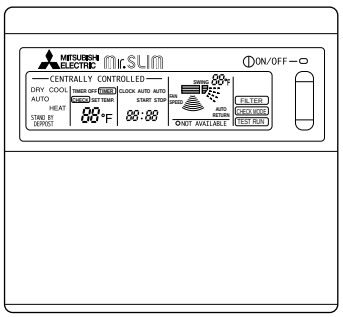
(7) Defrosting operation

After the outdoor unit starts the defrosting operation, when the temperature difference between the indoor coil temperature and room temperature gets out of RANGE A and into RANGE B, the indoor unit starts the defrosting mode. After the outdoor unit stops the defrosting operation, when the temperature difference returns to the RANGE A, the indoor unit stops the defrosting mode. While the indoor unit is in the defrosting mode, the indoor fan and the booster heater stop.

※1 RANGE A : Indoor coil temperature is more than 9 degrees above room temperature.
RANGE B : Indoor coil temperature is within 9 degrees either way of room temperature.
RANGE C : Indoor coil temperature is more than 9 degrees below room temperature



2-4 AUTO operation (Automatic COOL/HEAT change over operation)



<How to operate>

① Press POWER ON/OFF button.
② Press the MODE button to display “AUTO”
③ Press the SET TEMP. button to set the desired temperature.

NOTE: The set temperature changes 2°F when the SET TEMP. button is pressed one time.
Automatic 65 to 83°F.
●“AUTOMATIC” works to change by itself the operation mode either to cooling or heating according to the room temperature.

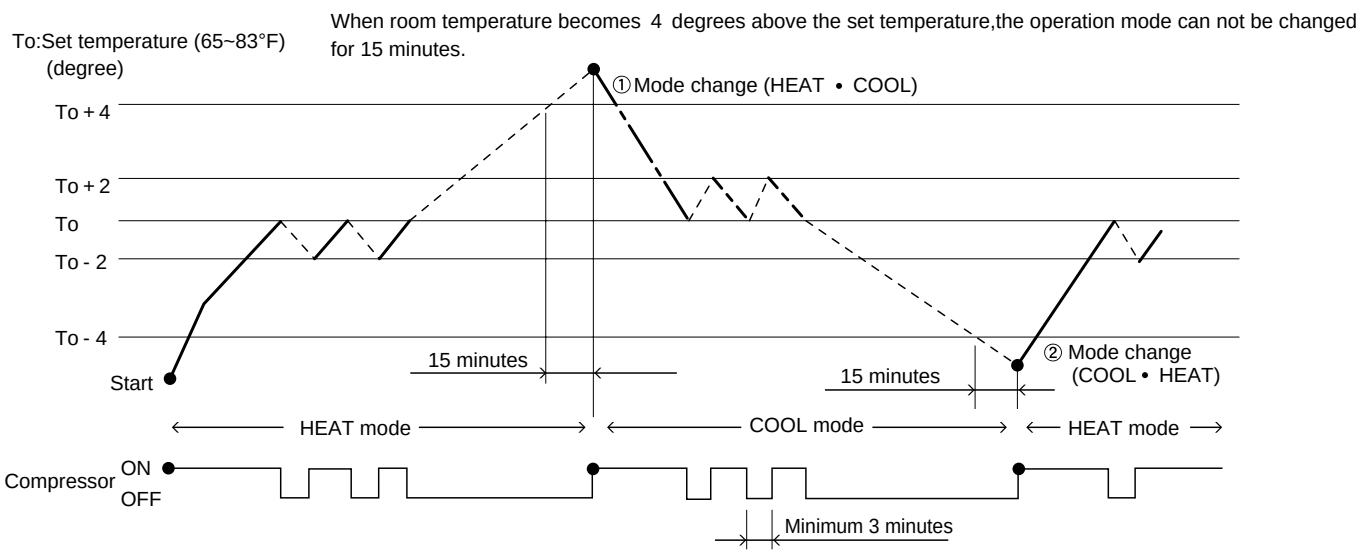
(1) Initial mode

① When AUTO operation starts after unit OFF.
- If the room temperature is higher than the set temperature, operation starts in COOL mode.
- If the room temperature is equal to or lower than the set temperature, operation starts HEAT mode.

② When AUTO operation starts after COOL or HEAT operation, the previous mode continues.

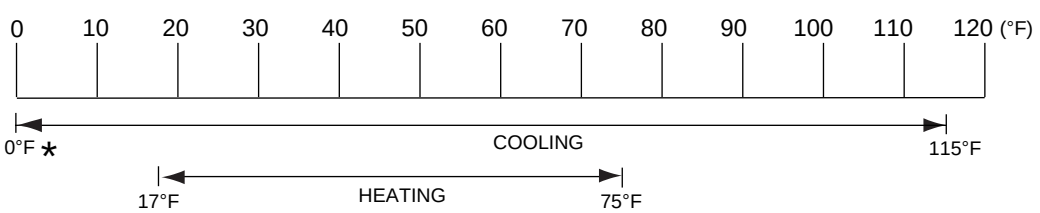
(2) Mode change

① HEAT mode changes to COOL mode when 15 minutes have passed since the room temperature became 4 degrees above the set temperature.
② COOL mode changes to HEAT mode when 15 minutes have passed since the room temperature became 4 degrees below the set temperature.



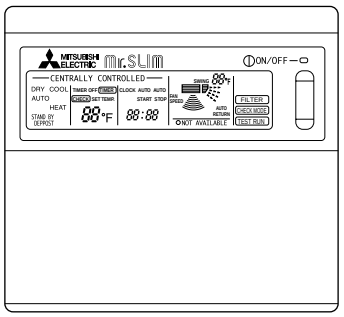
(3) Temperature range

AUTO operation is available under the outside air temperatures as follows.



* In case of the wind baffle installed.

2-5 Auto vane control



<How to operate>
To change the air flow direction, press AIR DISCHARGE button.

①	②	③	④
100% horizontal	60% downward and 40% horizontal	80% downward and 20% horizontal	100% downward

(1) Frequency judgement

When the unit operates for the first time after the circuit breaker turned to ON, the frequency, 50Hz or 60Hz, is judged by the horizontality sensing switch. If the frequency cannot be judged immediately for some reason, the sensing operation continues for 10 minutes with the vane motor at ON.

If the frequency cannot be judged yet after 10-minute sensing, the vane motor turns to OFF. But the AIR DISCHARGE DIRECTION display continues to be indicated.

(2) During cooling operation

When the cooling operation starts, the horizontal discharge is automatically set. However, the desired discharge among four modes below-listed can be selected with the AIR DISCHARGE UP/DOWN button on the remote controller.

①100%-horizontal discharge
②60%-downward and 40%-horizontal discharge
③80%-downward and 20%-horizontal discharge
④100%-downward discharge

NOTE: Discharge ② is available only when the fan speed is HIGH.

<AUTO RETURN>

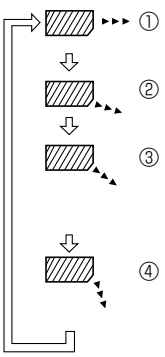
When discharge "③" or "④" continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

NOTE1: After that, the discharge "③" or "④" is available by setting with the remote controller, and it continues for 1 hour.

NOTE2: If the discharge direction changes from "③" or "④", the direction returns to the horizontal discharge when 1 hour has passed since the discharge "③" started.

NOTE3: If the discharge direction changes from "③" (or "④") to the horizontal discharge, the 1-hour timer to return the horizontal discharge is canceled at that time.

<Remote controller display>



Changes by pushing the AIR DISCHARGE UP/DOWN button:

(3) During heating operation

When the heating operation starts, the same discharge direction as was set last time is chosen automatically. However, the desired discharge can be selected from among four modes above-mentioned with the remote controller.

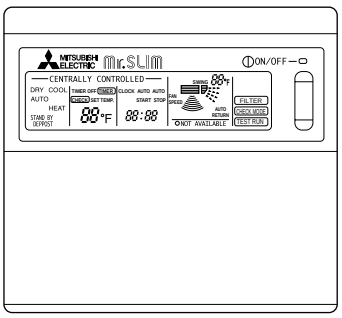
However, in the following cases, the discharge direction turns to the horizontal discharge despite the setting with the remote controller.

- ●When the thermostat turns to OFF
- ●During defrosting operation with the indoor fan stopped
- ●While the indoor fan operates at EXTRA LOW speed in the hot adjustment

(4) During the operation OFF, the auto vane is in the horizontal position.

(5) When the vane motor is out of order or the connector is badly connected, the air discharge display of the remote controller continues.

2-6 TIMER operation
WIRED REMOTE CONTROLLER



<Timer function>

AUTO STOP ·····The air conditioner stops after the set time lapses.
AUTO START ·····The air conditioner starts after the set time lapses.
AUTO OFF ·····Timer is not active.

<How to operate>

1. Press POWER ON/OFF button.
2. Press “TIMER ON/OFF” button to select AUTO STOP or AUTO START.
3. Press “CLOCK/TIMER” button to set desired time.
   Time setting is in 1 hour units for up to 24 hours.
   Each time TIMER SET button is pressed, set time increases by 1 hour. When TIMER SET button is pressed and held, the set time increases by 1 hour every 0.5 seconds.
4. To cancel the timer operation, press POWER ON/OFF button.

<Timer setting example>

This setting will stop the operation in 8hours.
With the lapse of time, time display changes in 1hour units, showing remaining time.

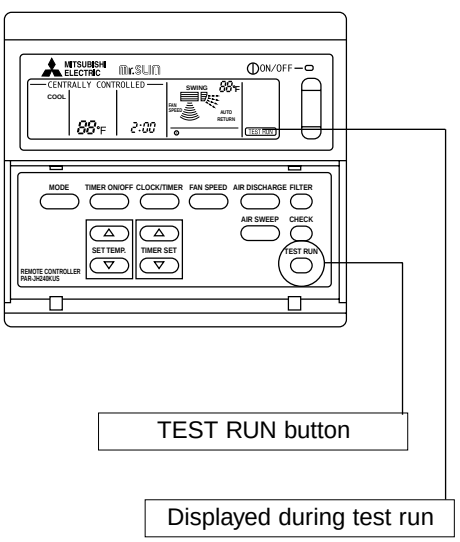
2-7 Test run

<Before test run>

- After installing, wiring, and piping the indoor and outdoor units, check for refrigerant leakage, looseness in power supply or control wiring, and mistaken polarity.
- Use a 500-volt measure to check the resistance between the power supply terminal block and ground to make sure that it is at least 1.0MΩ.

Attention:

Do not use the air conditioner if resistance is less than 1.0MΩ.



<How to operate>

1. Turn ON main breaker.
2. Press TEST RUN button twice. “TEST RUN” is displayed on remote controller.
3. Select “COOL” with MODE button to check that cool air is beginning discharged.
   Select “HEAT” with MODE button to check that warm air is beginning discharged.(after a while)
4. Select LOW/HIGH with FAN SPEED button to check that the fan speed changes properly.
5. Press AIR DISCHARGE button to check auto vane operation.
6. Check outdoor fan operation.
7. Check compressor operation referring to the indoor coil temperature code displayed on the remote controller.
8. After checking, press the ON/OFF button.

·The test run works for 2 hours and stops automatically.
To cancel the test run, press ON / OFF button or TIMER ON / OFF button.

(1) Indoor coil temperature code

During the test run, the indoor coil temperature code from 1 to 15 is displayed on the remote controller instead of room temperature. The code should fall with the lapse of time in normal COOL operation, and should rise in normal HEAT operation.

Code	1	2	3	4	5	6	7	8
Indoor coil temperature	-40~34°F	~50°F	~59°F	~68°F	~77°F	~86°F	~95°F	~104°F
Code	9	10	11	12	13	14	15	
Indoor coil temperature	~113°F	~122°F	~131°F	~140°F	~158°F	~194°F	Thermistor abnormality	

(2) Trouble during test run

- If the unit malfunctions during the test run, refer to section 10 in this manual entitled “TROUBLESHOOTING.”
- When the optional program timer is connected to the conditioner, refer to its operating instructions.

2-8 Emergency operation

When the remote controller or microprocessor malfunctions but all other parts are normal, emergency operation is started by setting the dip switch SW3 on the indoor controller board.

<Before emergency operation>

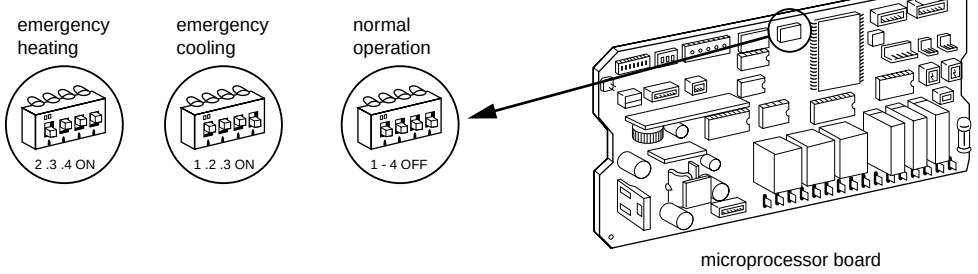
1. Make sure the compressor and the indoor fan are operating normally.
2. Locate the defect with the self-diagnostic function. When the self-diagnostic function indicates “protective function is working”, release the protective function before starting the emergency operation.

   CAUTION: When the self-diagnostic function indicates a check code of “P5” (drain pump malfunction), DO NOT start the emergency operation because the drain may overflow.

<How to operate>

1. For emergency cooling, set the dip switch SW3-1 to ON and SW3-2 to OFF.
   For emergency heating, set the dip switch SW3-1,2 to ON.

SW3 setting



2. Turn ON the outdoor unit breaker and then turn ON the indoor unit breaker.
   Emergency operation will now start.
3. During emergency operation, the indoor fan operates on high speed, the auto vanes do not operate.
4. To stop emergency operation, turn OFF the indoor unit breaker.
5. Movements of the vanes do not work in emergency operation, therefore you have to slowly set them manually to the appropriate position.

NOTE: The remote controller POWER ON/OFF button can not start/stop emergency operations.

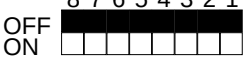
CAUTION: Do not use emergency cooling for more than 10 hours, as the indoor coil may freeze.

3 DIP SWITCH FUNCTIONS

Each figure shows the initial setting by factory.

3-1 On remote controller board

(1) SW17(Address selector)

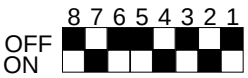


SW17-1 ~ 6) Switch for address setting

SW17-7) When two remote controllers are used, this switch sets the controller function.
OFF : The remote controller is set as a main controller.
ON : The remote controller is set as a sub controller.

SW17-8) Switch for system back-up
This switch is not available for series PCH.

(2) SW18 (Model selector)



SW18-1) Switch for timer mode setting
OFF : Single day
ON : Timer every day

SW18-2) Switch for filter sign display
OFF : Filter sign absent
ON : Filter sign present

SW18-3) Switch for filter sign time setting
OFF : 100Hr
ON : 2500Hr

SW18-4) Switch for temperature unit
OFF : °C (Celsius)
ON : °F (Fahrenheit)

SW18-5) Switch for HEAT display
OFF : HEAT display present
ON : HEAT display absent

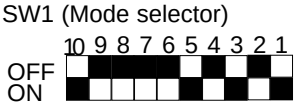
SW18-6) Switch for auto vane display
OFF : Auto vane display present
ON : Auto vane display absent

SW18-7) Switch for swing display
OFF : Swing display present
ON : Swing display absent

SW18-8) Switch for louver display
OFF : Louver display present
ON : Louver display absent

3-2 On indoor controller board

(1) SW1 (Mode selector)



SW1-1) Switch to change over between FAN mode and AUTOMATIC COOLING-HEATING CHANGE OVER mode.
OFF : Fan mode for cooling-only models.
ON : AUTOMATIC COOLING-HEATING CHANGE OVER mode for heat pump mode including PCH.

SW1-2) Switch to change over louver display
OFF : Swing
ON : Rotary

SW1-3) Switch for auto vane
OFF : Unit without vane
ON : Unit with auto vane

SW1-4) Switch for drain pump
OFF : The drain pump works in only cooling mode.
ON : The drain pump works in both cooling and heating mode. (For heat pump models)

SW1-5) Switch to change the temperature to start coil frost prevention
OFF : 36°F (For previous special models)
ON : 34°F (For all current models)

SW1-6) Switch for set temperature adjustment in heating mode
During heating operation, warm air collects near ceiling. When indoor unit is installed near ceiling, temperature read by room temperature thermistor and temperature near floor differ by about 7 deg. Therefore, set temperature of the indoor unit must be adjusted 7 deg. higher than set temperature of remote controller.
OFF : 7 deg. higher adjustment
ON : No adjustment

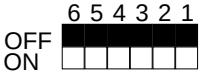
SW1-7) Switch for fan speed during thermostat OFF in heating mode
OFF : Low
ON : Extra low

SW1-8) Switch for fan speed during thermostat OFF in heating mode
OFF : Fan speed depends on SW1-7.
ON : Fan speed depends on remote controller.

SW1-9) Switch for outdoor unit abnormality detection
OFF : When abnormality occurs, it is detected.
ON : Even if abnormality occurs, it is not detected.

SW1-10) Switch for AUTO RESTART FUNCTION
OFF : This function does not work.
ON : This function works.

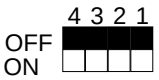
(2) SW2 (Address selector)



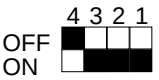
Use SW2 to set unit-address for group control.

(3) SW3 (Emergency operation switch)

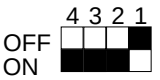
Normal operation (initial setting)



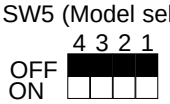
For emergency cooling



For emergency heating



(4) SW5 (Model selector)



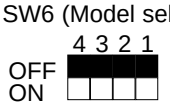
SW5-1) OFF : For models without automatic swing mechanism
ON : For models with automatic swing mechanism

SW5-2) OFF : For models with heating mode and cooling mode including series PCH
ON : For models with only cooling mode

SW5-3) Not yet used

SW5-4) OFF : LOSSNAY on air intake
ON : LOSSNAY air intake

(5) SW6 (Model selector)



SW6 is set on site for twin/triple control. This switch is not available for series PCH

4 INDOOR FAN CONTROL

Indoor fan relay output.

(a) During fan ON
The indoor fan relay turns ON. One second later, the phase control will start.

(b) During fan OFF
The phase control turns OFF. One second later, the indoor fan relay will turn OFF.

11 TROUBLE SHOOTING

1. REMOTE CONTROLLER DISPLAY ABNORMALITY

<table>
<tr><th>Display abnormality</th><th>Cause</th><th>Check points</th></tr>
<tr><td>The display “centrally controlled” on remote controller does not disappear.</td><td>1) Wrong address setting of remote controller/indoor controller board.
2) Timer adapter is connected to the remote controller.
3) Signal transmission error between indoor unit and remote controller.</td><td>1) Check the address setting of remote controller and indoor controller.
2) Check if the timer adapter is used correctly.
3) ① Turn another remote controller’s DIP SW17-7 ON to make it sub controller.
② Connect the sub controller to the unit, and turn circuit breaker ON.
● If the display “centrally controlled” disappears, replace the original remote controller.
● If the display remains the same, replace the indoor controller board.</td></tr>
<tr><td>When remote controller POWER switch is turned to ON, the check code “E0”appears.</td><td>1) Signal transmission error between indoor unit and remote controller</td><td>1) ① Connect a sub remote controller.
② Turn circuit breaker ON.
If the display “centrally controlled” remains, replace the indoor controller board.
③ If the display disappears, turn the remote controller POWER switch ON and check as follows.
<table>
<tr><th></th><th>Remote controller</th><th>Sub remote controller</th><th>Malfunction</th></tr>
<tr><td>1</td><td>Operating Display</td><td>E0 Display</td><td>Malfunction of Indoor Unit</td></tr>
<tr><td>2</td><td>Operating Display</td><td>Operating Display</td><td>Malfunction of Remote controller</td></tr>
<tr><td>3</td><td>No Display</td><td>E0 Display</td><td>Malfunction of Indoor Unit and Remote Controller</td></tr>
<tr><td>4</td><td>No Display</td><td>Operating Display</td><td>Malfunction of Remote controller</td></tr>
</table></td></tr>
<tr><td>When remote controller POWER switch is turned to ON, operating display appears, but disappears soon.</td><td>1) Short circuit of indoor/outdoor connecting wire
2) Short circuit of transmission wire.
3) Short circuit of drain sensor heater circuit.
4) Wrong operation of remote controller due to noise wave emitted by other appliances.</td><td>1), 2) Check the wire
3) Measure the resistance of the drain sensor connector CN50 ① - ③. If normal, the value should be 82Ω.
4) Turn the circuit breaker OFF, and then turn ON.
If the remote controller remains abnormal, despite the above measures, replace the indoor controller board.</td></tr>
<tr><td>Despite turning POWER switch ON, the remote controller display does not appear.</td><td>1) Damaged remote controller.
2) Short circuit of transmission wire.
3) Bad contact of indoor CN40.
4) CN40 is attached to a sub unit.
5) Damaged transformer.
6) Bad contact of CN4T.
7) Broken fuse.
8) Circuit breaker OFF.</td><td>1) Measure the voltage between terminals of remote controller. If no voltage, remove the terminals and measure the voltage between wires. If the voltage is between 6VDC and 12V, replace the remote controller.
2) ~ 8) Check each point.
If normal, replace the indoor controller board.</td></tr>
</table>

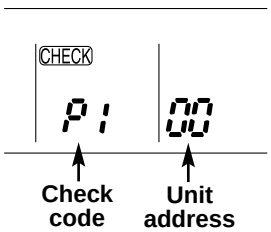
2. SELF DIAGNOSTIC FUNCTION WITH REMOTE CONTROLLER (WIRED REMOTE CONTROLLER)

2-1 When malfunction occurs during operation

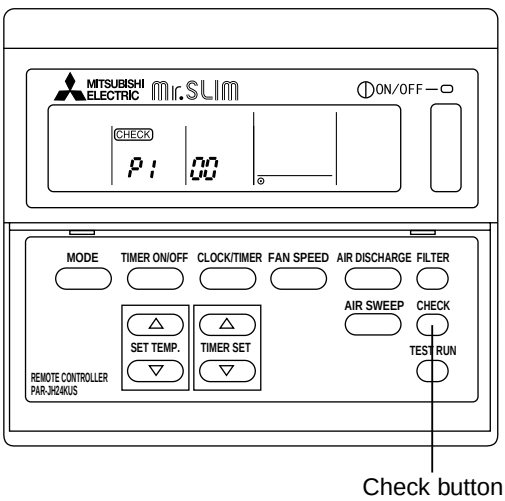
When a malfunction occurs, the indoor and outdoor units stop and the malfunction is displayed on the LCD of the remote controller.

(1) ON the set temperature display part, “CHECK” appears, and the unit address and the check code are displayed alternately at one-second intervals. (Check mode)

Example



CHECK mode



(2) When one remote controller controls several units in the group control, the LCD shows the unit address and check code of the first malfunctioning unit.

(3) To cancel the check mode, press the ⏻ ON/OFF button. In remote ON/OFF control, press the remote ⏻ ON/OFF switch. In centralize control, turn OFF the ⏻ ON/OFF button of centralize controller.

NOTE: The latest check code is memorize, even if the check mode is cancelled by the way mentioned above. It takes 60 seconds maximum to display the memorize check code.

2-2 How to use the self diagnostic function for service

A. For normal control with one unit and one remote controller

(1) Pressing the CHECK button on the remote controller twice starts the self diagnostic function.

(2) During the self diagnostic function, “CHECK MODE” appears at two positions on the remote controller display. Then, at least 10 seconds later, the unit address and the check code is alternately displayed at one-second intervals.

(3) Check and repair the unit according to the check code. (Refer to page OC193-46.)

B. For group control using one remote controller

(1) Pressing the CHECK button on the remote controller twice starts the self diagnostic function.

(2) Press the △ SET TEMP. button or ▽ SET TEMP. button on the remote controller to advance or go back to the unit address. Each time △ SET TEMP. button is pressed, the unit address advances by one. Each time ▽ SET TEMP. button is pressed, the unit address goes back by one.
The check code and the unit address, appear alternately.

(3) The check code “U8” means no malfunction has occurred since installation.
The check code “E0” means the following conditions:
- The unit address displayed on the remote controller does not apply to any unit.
- power is not supplied to the unit.
- Signal transmitting/receiving circuit is abnormal.

(4) Check and repair the unit according to the check code. (Refer to page OC193-46.)

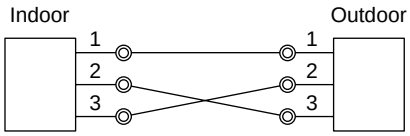
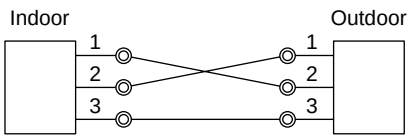
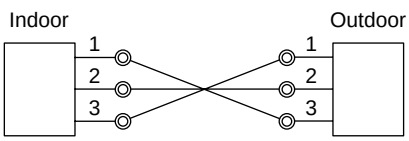
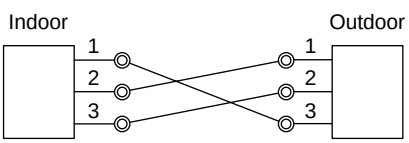
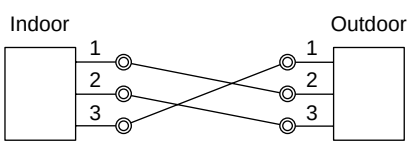
Check code	Diagnosis of malfunction	Cause	Check points
E0	Signal transmitting/receiving error Indoor controller does not respond to remote controller signal.	During individual unit control 1) Bad contact of transmission wire 2) Signal transmitting/receiving circuit is abnormal.	1) Check the transmission wire. 2) Check with another remote controller. If “E0” is still indicated, replace the indoor controller board. If other check code appears. replace the former remote controller.
P1	Abnormality of room temperature thermistor (RT1)	1) Bad contact of thermistor 2) Damaged thermistor	1) Check the thermistor. 2) Measure the resistance of the thermistor. If normal, it should be as follows. 32°F···15kΩ 86°F ··4.3kΩ 50°F···9.6kΩ 104°F ··3.0kΩ 68°F···6.3kΩ If normal, replace the indoor controller board.
P2	Abnormality of indoor coil thermistor (RT2)		
P3	Signal transmission error (Remote controller does not respond to indoor controller signal.)	1) Bad contact of transmission wire 2) Signal transmitting/receiving circuit is abnormal. 3) Wrong operation of remote controller due to noise wave emitted by other appliances	1) Check the transmission wire. 2) Check with another remote controller. If “P3” is still indicated, replace the indoor board. If other check code appears, replace the original remote controller. 3) Short-circuit between ① and ② of CN40 and attach CN40 to the following units. ● Second unit in twin control ● Second and third units in triple control ● Sub units in group control
P4	Abnormality of drain sensor	1) Bad contact of transmission wire 2) Damaged thermistor	1) Check the connector. 2) Measure the resistance of the thermistor ④ - ⑤. As for the normal resistance, refer to the case P1. If normal, replace the indoor controller board.
P5	Malfunction of drain pump	1) Malfunction of drain pump 2) Damaged drain sensor	1) Check the drain pump. 2) ● Check the drain sensor. ● Check the drain sensor heater. If normal, its resistance should be 82Ω. If normal, replace the indoor controller board.
P6	Coil frost protection has worked.	1) Short cycle of air cycle 2) Dirty air filter 3) Damaged fan 4) Abnormal refrigerant	1) Clear the obstructions from the air cycle. 2) Clean the air filter 3) Check the fan. 4) Check the refrigerant temperature.
P7	System error	1) Wrong address-setting 2) Signal transmitting/receiving circuit of remote controller is abnormal. 3) Wrong SW6-setting	1) Check the address-setting. 2) Check with another remote controller. If check code other than “P7” appears, replace the original remote controller. 3) Check SW6 setting.
P8	Abnormality of outdoor unit	1) Wrong wiring of indoor/outdoor connecting wire 2) Reversed phase 3) Protection device has worked 4) Damaged outdoor coil thermistor	1) Check the indoor/outdoor connecting wire. 2) Change the connection of electric wiring. 3) Check the detail of the protection device. 4) Measure the resistance of the outdoor coil thermistor. If normal, replace the outdoor controller board.

3. WRONG WIRING ON SITE

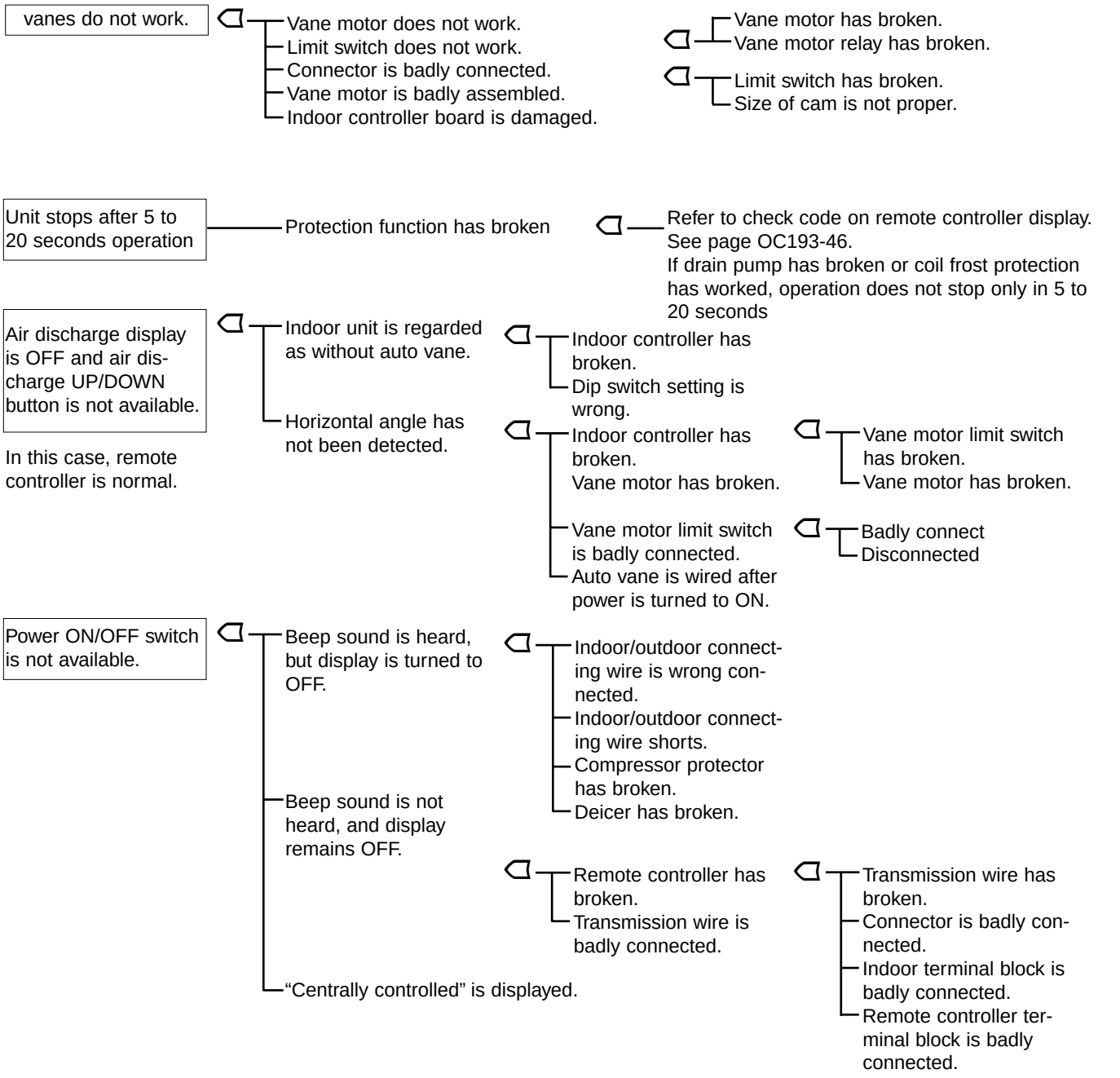
3-1 Between remote controller and indoor unit

If the wire is disconnected between the remote controller and the indoor unit, nothing is displayed on the remote controller when the POWER button is pressed. The beep sound will also not be heard.

3-2 Phenomenon due to wrong wiring between indoor and outdoor units

Wrong wiring	Mode	Thermostat	Phenomenon
	COOL	OFF	Operation stops.
		ON	4-Way valve turns ON. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Cooling operation. Several minutes later, check code “P8” appears on remote controller display.
		ON	Normal operation.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops, 27 minutes later, check code “P8” appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.
Disconnection between 1 and 1 or 2 and 2.	COOL	OFF	Operation stops.
		ON	Operation stops. 9 minutes later, check code “P8” appears on remote controller display.
	HEAT	OFF	Operation stops. 4-way valve turns OFF.
		ON	27 minutes later, check code “P8” appears on remote controller display.
Disconnection between 3 and 3.	COOL	—	Normal operation.
	HEAT	OFF	Operation stops. 4-way valve turns OFF.
		ON	Operation stops. 27 minutes later, check code “P8” appears on remote controller display.

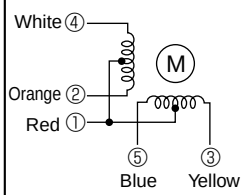
4. OTHER TROUBLES AND CAUSES

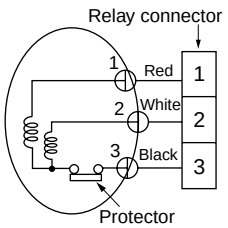


5. How to check the parts

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH1)

Liquid pipe thermistor (TH2)</td><td>Disconnect the connector then measure the resistance using a tester.
(Surrounding temperature 50°F~86°F)

<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table> (Refer to the thermistor)</td></tr>
<tr><td>Vane motor
 
</td><td>Measure the resistance between the terminals using a tester.
(Surrounding temperature 68°F~86°F)

<table><tr><th rowspan="2">Connector</th><th colspan="3">Normal</th><th rowspan="2">Abnormal</th></tr><tr><th>24EK1</th><th>30EK1</th><th>36,42EK1</th></tr><tr><td>Red — Yellow</td><td rowspan="4">186~214Ω</td><td rowspan="4">140~160Ω</td><td rowspan="4">140~160Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Red — Blue</td></tr><tr><td>Red — Orange</td></tr><tr><td>Red — White</td></tr></table></td></tr>
<tr><td>Fan motor
 
</td><td>Measure the resistance between the terminals using a tester.

<table><tr><th rowspan="3">Motor terminal
or
Relay connector</th><th colspan="3">Normal</th><th rowspan="3">Abnormal</th></tr><tr><th colspan="3">PCH</th></tr><tr><th>24EK1</th><th>30EK1</th><th>36,42EK1</th></tr><tr><td>Red-Black</td><td>45.0Ω</td><td>45.0Ω</td><td>20.4Ω</td><td rowspan="2">Open or short</td></tr><tr><td>White-Black</td><td>44.8Ω</td><td>44.8Ω</td><td>20.7Ω</td></tr></table></td></tr>
</table>

<Thermistor Characteristic graph>

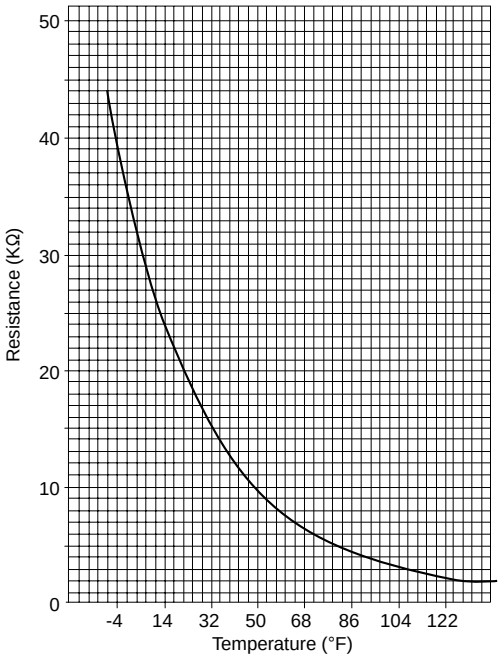
Thermistor for lower temperature	Room temperature thermistor(TH1) Liquid pipe thermistor(TH2)

Thermistor R_0=15kΩ ± 3%
Fixed number of B=3480kΩ ± 2%

$$Rt=15\exp\{3480(\frac{1}{273+\{(t-32)/1.8\}}-\frac{1}{273})\}$$

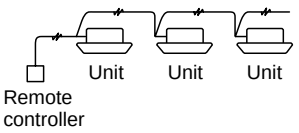
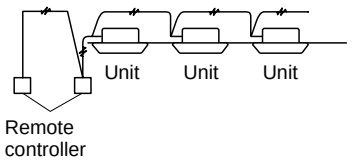
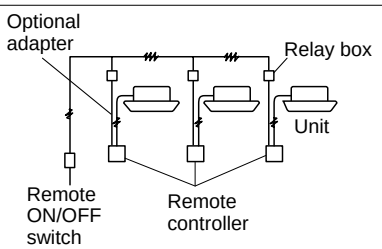
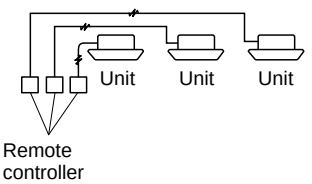
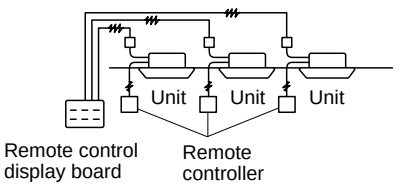
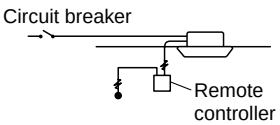
32°F	15kΩ
50°F	9.6kΩ
68°F	6.3kΩ
77°F	5.2kΩ
86°F	4.3kΩ
104°F	3.0kΩ

< Thermistor for lower temperature >



12 SYSTEM CONTROL

1. VARIETY OF SYSTEM CONTROL FUNCTIONS

1 Group control by a single remote controller (See page OC193-52.)		A number of units, installed at different locations can be started and controlled with a single remote controller. The remote controller can be mounted in a different location using a non-polar two-wire cable, which can be extended up to 550 yards. A maximum of 50 units are controllable by a single remote controller. All units operate in the same mode.
2 Control using two remote controllers (See page OC193-53.)		Two remote controllers can be used to control either one unit or several units in group control. This enables to control units with ease either from a distance or close rang. Units operate according to the latest command from either remote controller.
3 Both remote ON/OFF and individual controls (See page OC193-53.)		All units can be turned on or off simultaneously using the remote ON-OFF switch. Besides each unit can be controlled individually by each remote controller. During remote ON-OFF control, a message of “CENTRALLY CONTROLLED” is displayed on the LCD of the remote controller. This method is available for both one unit control and several units control.
4 Individual control by grouping remote controllers (See page OC193-54.)		By grouping the remote controllers to one place, several units installed at different locations can be controlled individually, and operation conditions of all units are visible without a special control board. Control method is the same as that of the single unit with a single remote controller.
5 Multiple remote control display (See page OC193-55.)		Several units can be controlled by remote control display board. Operation conditions of all the units are visible with the remote control display board. Individual control by each remote controller is also available.
6 AUTO RESTART FUNCTION (See page OC193-55.)		Units can be started or stopped by circuit breaker on or off. Remote controller is also available. By this function, when the power is restored after power failure, the unit restarts automatically.

2. GROUP CONTROL BY A SINGLE REMOTE CONTROLLER

A maximum of 50 units can be started in order according to the dip switch settings

2-1 How to wire

(1) Connect the remote controller to the double terminal block on the indoor controller board of the master unit, that is, No.0 unit. (See Figure 1.)
(2) Connect the double terminal block of the master unit to the double terminal block of No.1 unit.
(3) Connect the double terminal block of No.1 unit to the double terminal block of No.2 unit.
(4) Continue the process until all the units are connected with two-wire cables. (See Figure 2.)
(5) Remove the connector CN40 from the indoor controller board of each unit except the master unit. (See Figure 3.)
(6) Set the unit-address of each unit with SW2 on the indoor controller board following the instructions below.

Figure 1

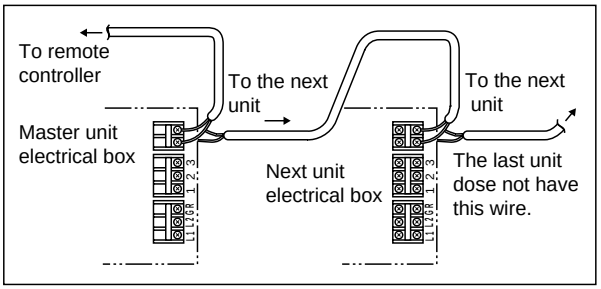
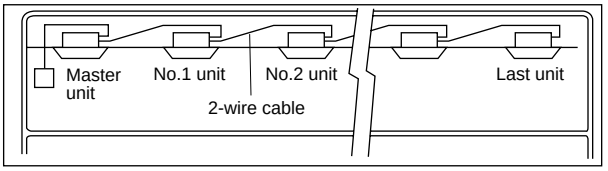


Figure 2



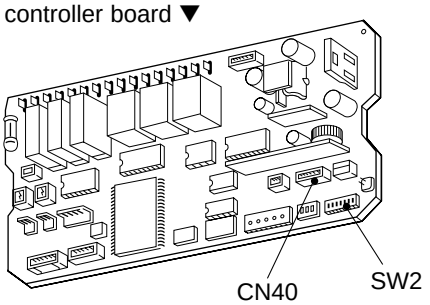
2-2 How to set unit-address

The unit-address also serves as a successive-start timer which starts each unit at intervals of 1 second. If two or more units have the same unit-address in a group control, operation stops due to system error. Be sure to set SW2 correctly following the instructions below.

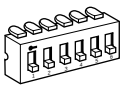
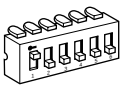
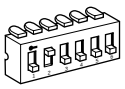
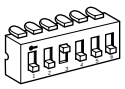
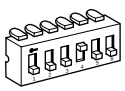
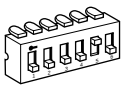
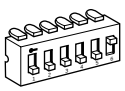
(1) Each lever of SW2 shows the number as follows.
SW2-1 : 1 SW2-4 : 8
SW2-2 : 2 SW2-5 : 16
SW2-3 : 4 SW2-6 : 32
(2) Total number of levers turned to ON shows the address of the unit.
If you turn ON SW2-1 and SW2-2, the unit-address is set as No.3.
(3) In this way, set from the. master unit to the last unit.
Do not forget to set the master (No. 0) unit.

Figure 3

Indoor controller board ▼



Setting examples

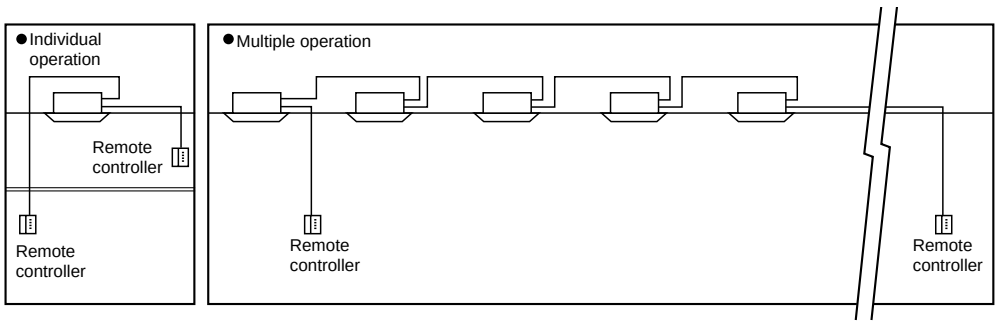
	Master (No. 0) unit	No. 1 unit	No. 2 unit	No. 4 unit	No. 8 unit	No. 16 unit	No. 32 unit
SW2	ALL OFF 	1 ON 	2 ON 	3 ON 	4 ON 	5 ON 	6 ON 
Unit address & start delay in seconds.	0	1	2	4	8	16	32

2-3 Unit control

The remote controller can control all units ON/OFF, temperature,air flow, and swing louver. However, the thermostat in each unit turns to ON or OFF individually to adjust the room temperature.

3. CONTROL USING TWO REMOTE CONTROLLERS

Two remote controllers are available for control of either one unit or a group of units. Units operate according to the latest command from either of the two remote controllers.
However, before operation, be sure to set one remote controller for "main controller" and the other for "sub controller", using dip switch SW17-7 of the remote controller.



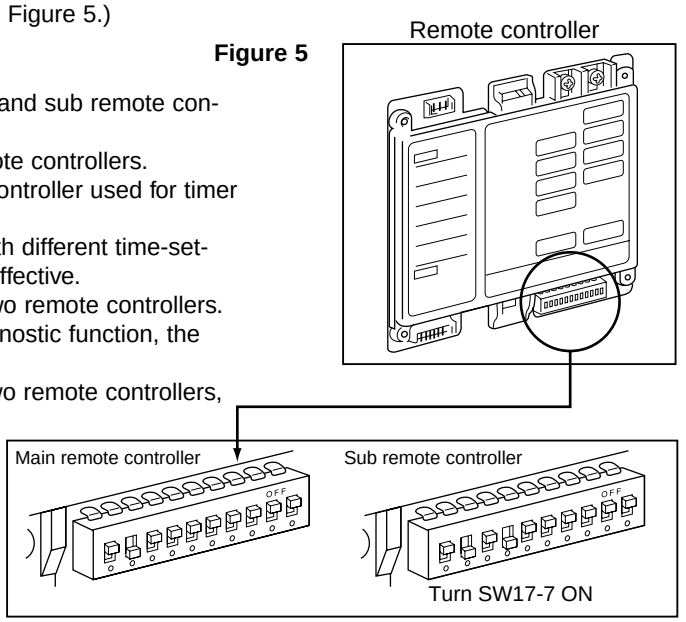
3-1 How to set SW17-7

(1) For the main remote controller, turn SW17-7 OFF. (See Figure 5.)
(2) For the sub remote controller, turn SW17-7 ON.

3-2 Remote controller LCD indication

(1) The same indications always appear on both the main and sub remote controllers, excepting in the timer operations.
(2) Timer operations can be set with either of the two remote controllers. However, LCD indication appears only on the remote controller used for timer settings.
(3) If both remote controllers are set for timer operation with different time-settings, the timer operation of shorter remaining-time is effective.
(4) Self-diagnostic function is available with either of the two remote controllers. If one of the remote controllers is used for the self-diagnostic function, the other remote controllers displays the check mode.
If the self-diagnostic function is reset by either of the two remote controllers, both remote controllers are reset.

Figure 5



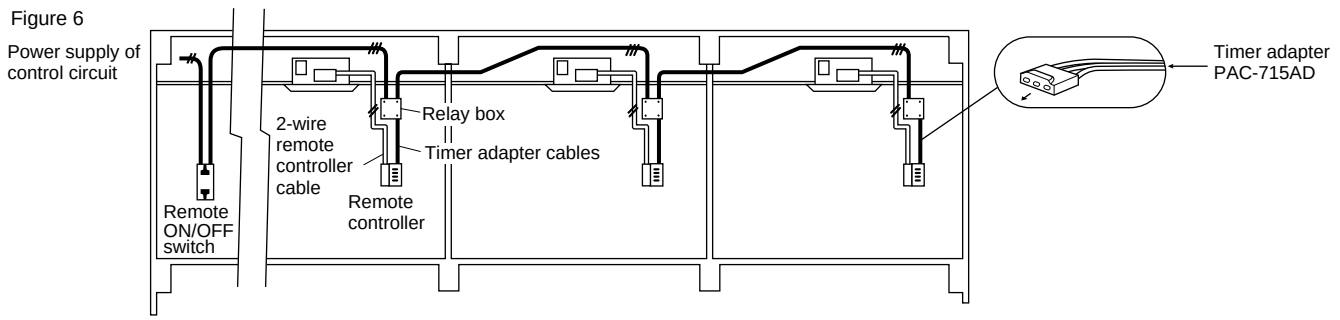
4. REMOTE ON-OFF AND INDIVIDUAL REMOTE CONTROLS

This method is available to control one unit or any number of units.
The following operations are available by connecting a relay, a timer adapter (PAC-715AD), and remote ON/OFF switch to the system. Timer adapter (PAC-715AD) is an optional part. Other parts are on the market.
(A) To start all units in order by remote ON-OFF switch
(B) To stop all units simultaneously by remote ON-OFF switch
(C) To switch from the remote ON-OFF control and the individual remote control

4-1 System

Figure 6 shows the case of three units as an example.The same is the case with any number of units.

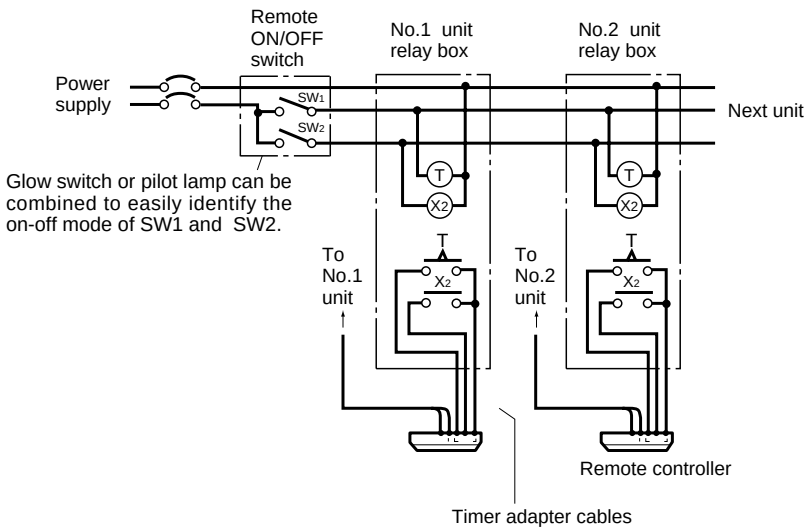
Figure 6



NOTE1 : Install the relay box where you can be serviced easily.
NOTE2 : For control circuit wiring, use a wire of No. 14 AWG or a control cable according to the power supply of control circuit.
NOTE3 : When the power supply of the control circuit is 208/230V AC,
- ● Do not connect the control circuit wire to the remote controller cable directly.
- ● Do not place the control circuit wire and the remote controller cable into the same conduit tube.

4-2 Basic wiring

Caution : Before starting all units simultaneously by the remote ON-OFF switch, be sure to connect a sequence-start timer into the remote ON-OFF circuit. Otherwise, rush of starting current exert a bad influence upon the power supply.



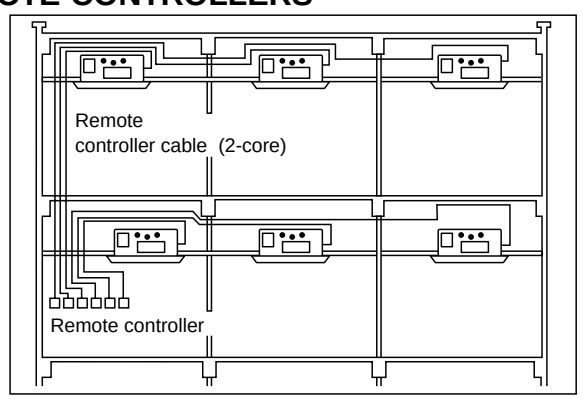
4-3 Switch function of remote ON-OFF switch

		SW2 (Switches between remote ON-OFF and individual control)	
		ON (Remote ON-OFF control)	OFF (Individual control)
SW1 (Switches between remote ON and OFF.)	ON (Start)	All units start together. ※1 Individual control is not available.	Each unit can be controlled by each remote controller. Remote ON-OFF switch is not available.
	OFF (Stop)	All units stop together. ※2 Individual control is not available.	

※1 After all units start together, if SW2 is turned OFF, each unit can be individually stopped by each remote controller.
※2 After all units stop together, if SW2 is turned OFF, each unit can be individually started by each remote controller.

5. INDIVIDUAL CONTROL BY GROUPING THE REMOTE CONTROLLERS

- ● Grouping the remote controllers allows individual control and centralized monitoring of units installed in different places without a special control board.
- ● Remote control cables can be extended up to 550 yards. When the cable length exceeds 39 ft, use the double-insulated two-core cable such as Belden 9407, and the cable thickness must be No. 22 AWG or above.
- ● When gathering the power ON/OFF switches of air conditioners near the remote controllers, you should also install the power ON/OFF switch near each unit to prevent electric trouble in servicing.



6. MULTIPLE REMOTE CONTROL DISPLAY

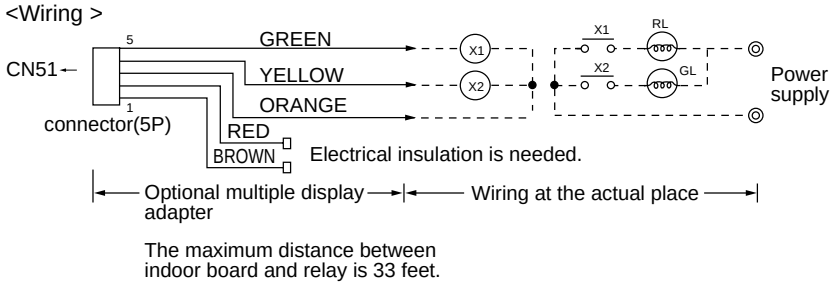
You can control several units by a multiple remote control display, if you wire an optional multiple display adapter (PAC-725AD) with relays and lamps on the market.

6-1 How to wire

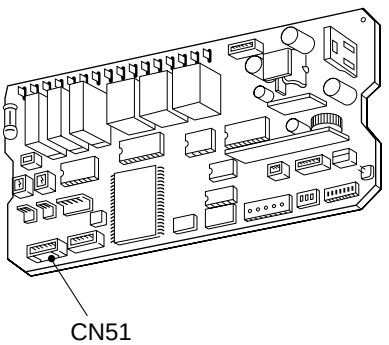
(1) Connect the multiple display adapter to the connector CN51 on the indoor controller board.

(2) Wire three of the five wires from the multiple display adapter as shown in the below figure.

<Wiring >

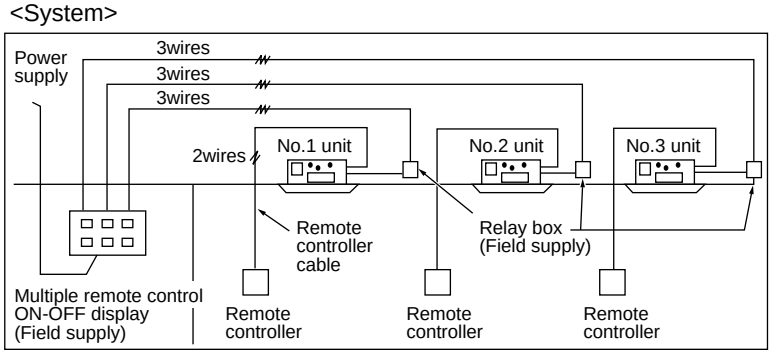


Indoor controller board



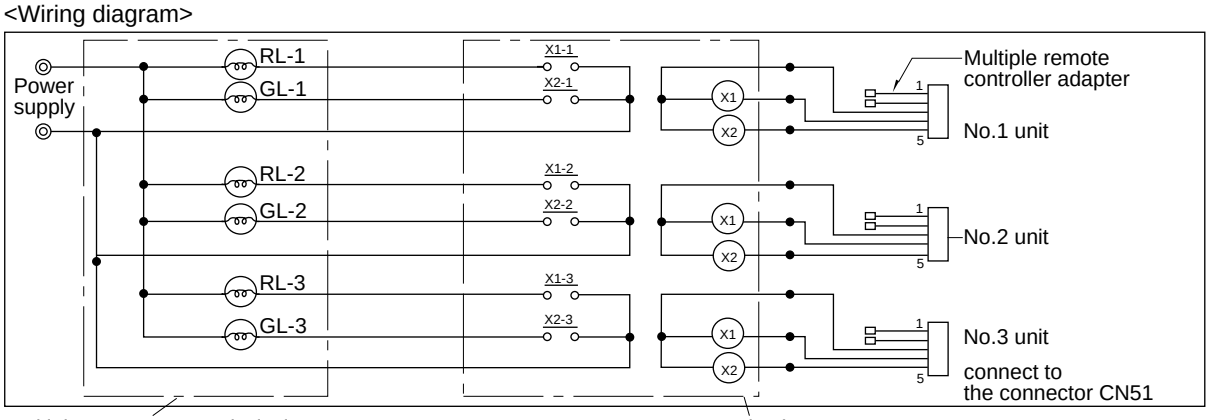
[Notes on Signs]
X1:Relay (for check lamp)
X2:Relay (for operation lamp)
RL:Check Lamp
GL:Operation Lamp
[Field supplied parts]
Relays:12V DC with rated coil power consumption below 0.9W.
Lamps:Matching to power supply voltage.

<System>



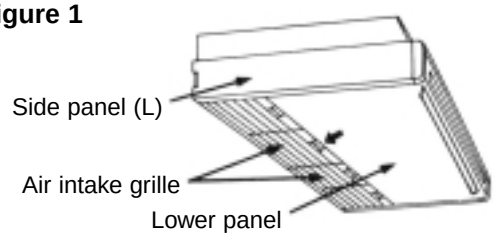
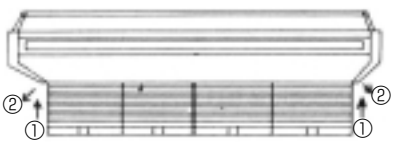
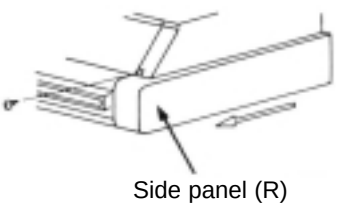
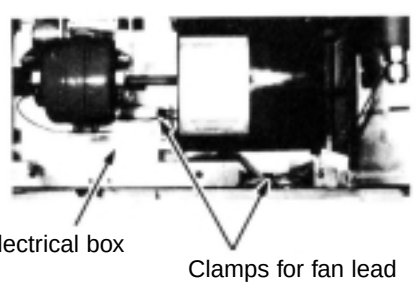
(Operation check)

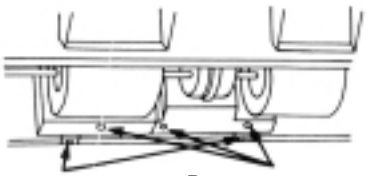
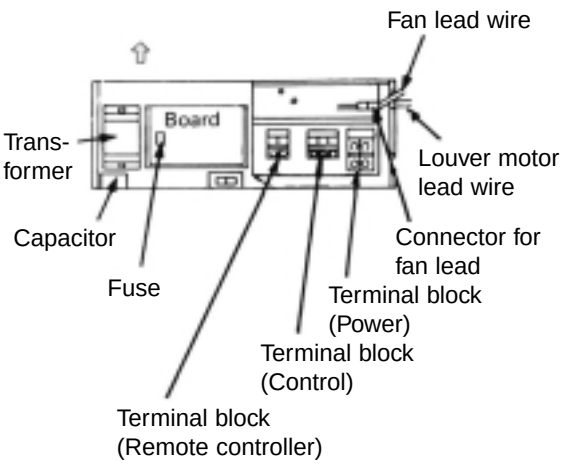
<Wiring diagram>

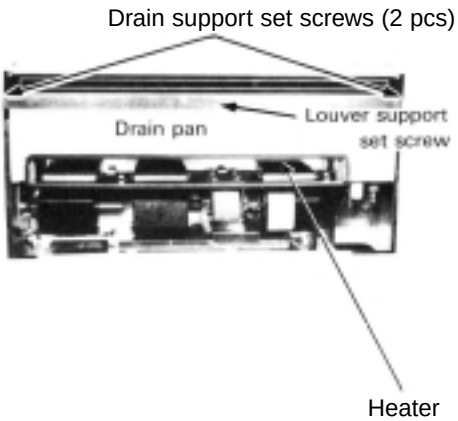
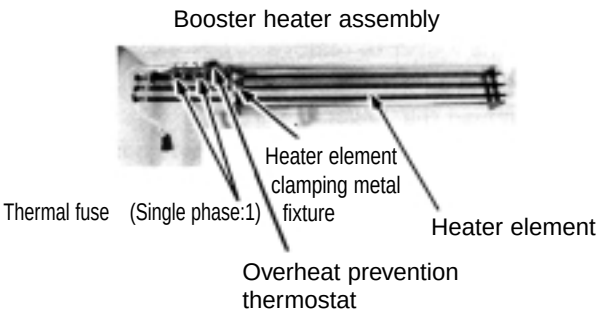
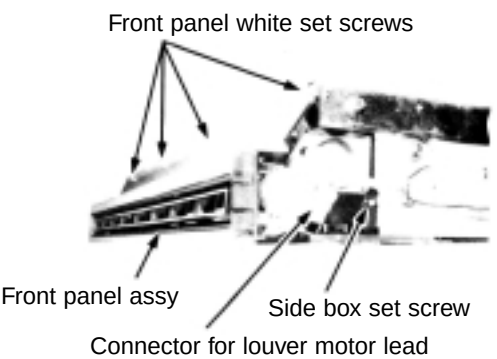


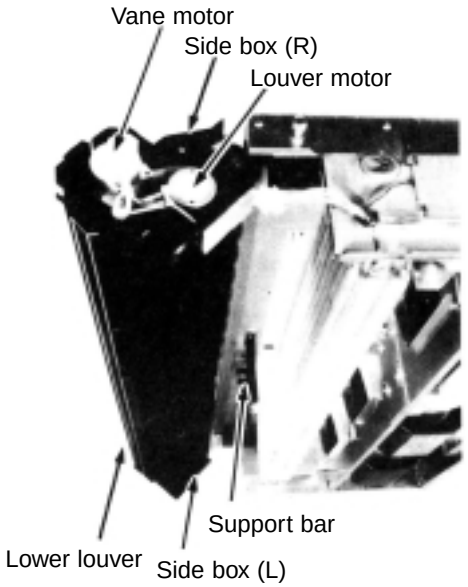
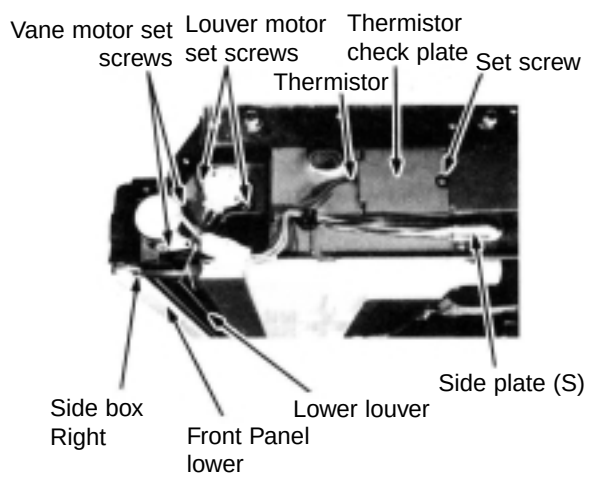
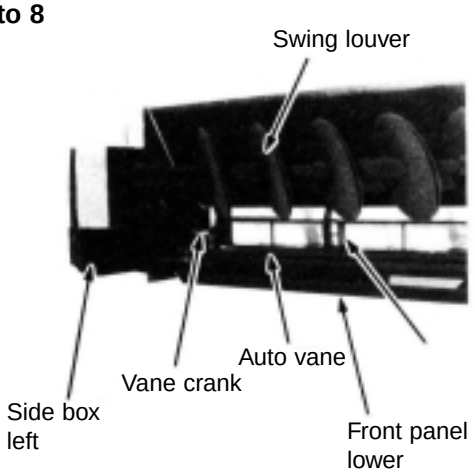
13 DISASSEMBLY PROCEDURE

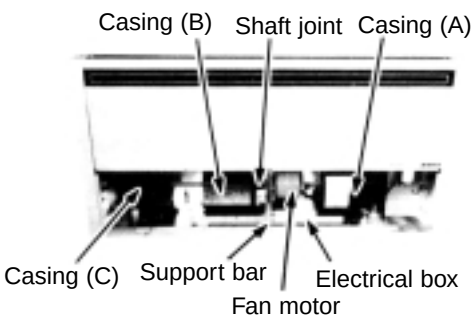
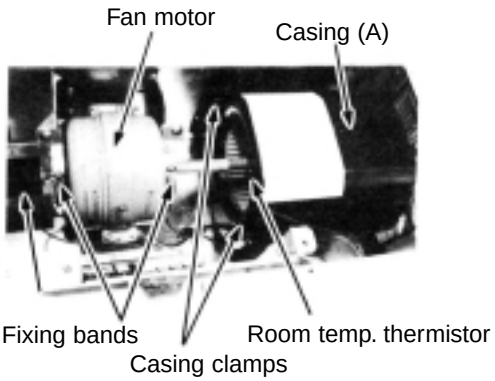
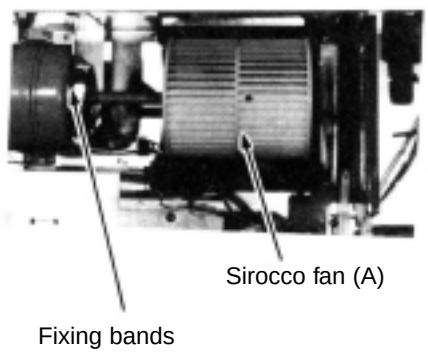
PCH24FK1

OPERATING PROCEDURE	PHOTOS&ILLUSTRATION
1. Removing the air intake grille (1) Unhook the clasps at the edge of the grille and open the grill. (2) Lift up the grill in direction of arrow ① in Figure.2. (3) Pull the grill toward you to remove. (In direction of arrow ②)	**Figure 1**  **Figure 2** 
2. Removing the side panel (1) Remove a white screw of the side panel (RIGHT). (2) Pull out the panel toward you to remove. (3) Remove a white screw of the side panel (LEFT). (4) Pull out the panel toward you to remove.	**Figure 3** 
3. Removing the lower panel (1) Remove the lower panel set screws, 2 pcs on each side and 3 pcs at the rear. (total 7 pcs) ※ PCH24EK has 4 pcs at the rear and 2 pcs on each side. (total 8 pcs)	**Figure 4** 
4. Removing the electrical box (1) Remove the air intake grille. (Refer to 1.) (2) Remove the support bar set screw and remove the bar. (See figure. 4) (3) Loose the lead clamps (2 pcs) for the sirocco fan and the louver motor. (See photo 1)	**Photo 1** 

OPERATING PROCEDURE	PHOTOS&ILLUSTRATION
(4) Remove the electrical box set screws. (2 pcs) Pull down the electrical box and hang it from the rear panel using the S hooks located on the both sides of the box. (5) The electrical box has two covers. (R and L) Remove the 2 screws on the cover (R), and remove the screw on the cover (L). Then remove the box corners. (6) This enables checking the inside of the electrical box. (See figure.6) • Indoor controller board (I.B) • Transformer • Fan capacitor (C1) • Fuse • Terminal block (Power) • Terminal block (Control) • Terminal block (Remote controller)	**Figure 5**  Electrical box Set screws (2 pcs) Box cover set screws (3 pcs) **Figure 6** 

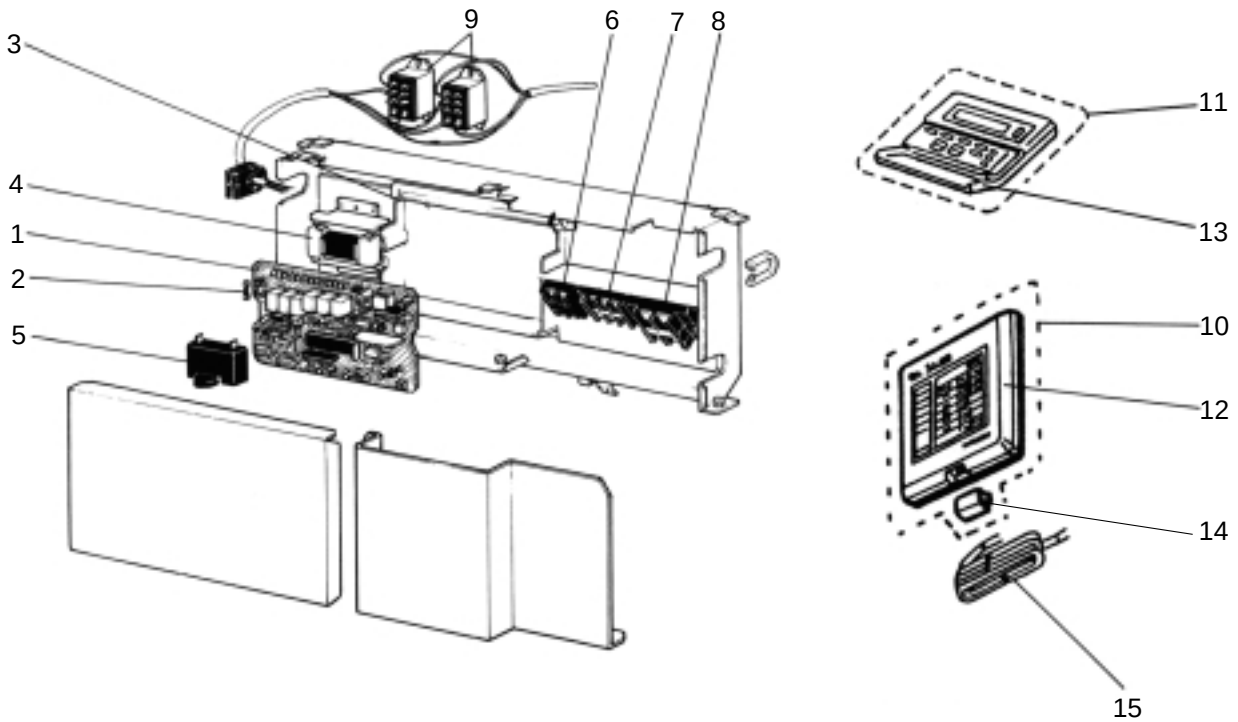
OPERATING PROCEDURE	PHOTOS
5. Removing the drain pan After removing the lower panel: (1) Remove the drain pan support set screws (2 pcs) (2) Remove the louver support set screw. (See photo 3) (3) Remove the drain pan.	**Photo 3** 
6. Removing the booster heater assembly (1) Remove the 3 heater assembly set screws, pull out the heater lead wire connecting connector, then remove the heater assembly (see Photo 3). The above enables to replace the heater assembly parts (see Photo 4). (2) Booster heater assembly • Overheat prevention thermostat • Thermal fuse (Microprocessor operated thermostat) • Heater element For broken/disconnected heater replace only the heater element of the disconnected section. ①Pull out the lead wire terminals from both ends of the broken disconnected heater element. ②Remove the heater element clamping metal fixture screws. ③Pull out the heater element, then replace.	**Photo 4** 
7. Removing the front panel assembly After removing the drain pan: (1) Disconnect the lead connector for louver motor at the right side. (2) Pull the lower louver forward and unhook the clamps. (2 points at the center) (3) Remove the front panel white set screws. (4 pcs) (4) Remove the side box set screws on both side. (4 screws on the side and front, 1 screw at the bottom, on each side.) (5) The panel assembly can be removed. (See photo 5)	**Photo 5** 

OPERATING PROCEDURE	PHOTOS
8. Removing the louver motor and vane motor Remove only the right side panel to remove these motors. (1) Remove setting screws of each motor. (2 pcs each, total 4 pcs) (See photo 6) **9. Removing the swing louver** (1) Remove the swing louver from the joint on the right side. (2) Slide the louver out to the left side.	**Photo 6** 
10. Removing the lower louver (1) Pull down and unhook the clasps. (3 points) (2) Warp the louver to remove. **11. Removing the auto vane.** After removed the lower louver: (1) Remove a fixing screw of the left side box and the lover panel. (2) Pull the left side box outward. (3) Remove the auto vane shaft from the joint. (4) Slide the auto vane out to the right side. **12. Removing the vane crank** The vane crank will be removed easily after removed the auto vane. **13. Removing the front louver** (1) Pull and unhook the louver toward you. (Clasps are 5 pcs)	**Photo 7**  **Photo 8** 

OPERATING PROCEDURE	PHOTOS
14. Removing the fan motor After remove the electrical box covers: (1) Disconnect the lead connector for fan. (2) Pull out the room temp. thermistor from the casing (A). (See photo 9) (3) Loose the shaft joint set screws (2 pcs) with a hexagonal wrench. (size 3mm). (4) Unhook the casing (A) by pushing. (2 points for each side) (5) Open about half of the casing (A) and take it out. (6) Loose the fixing band set screws. (1 pcs on the both sides of the fan motor.) (7) Remove the fixing bands. (8) Take out the fan motor. **Photo 8**  	**Photo 9**  **Photo 10** 
15. Removing the room temperature thermistor After removed the electrical box covers: (1) Pull out the room temperature thermistor from the casing (A). (2) Disconnect the connector (CN-20) from the controller board in the electrical box. (3) Take out the thermistor. **16. Removing the indoor coil thermistor** After removed the electrical box covers: (1) Remove the right side panel. (2) Remove the set screw of the thermistor check plate and the set screws of the side plate. (3 pcs) (See phot 9) (3) Remove the indoor coil thermistor from the heat exchanger. (4) Disconnect the connector (CN-21) from the controller board in the electrical box. (5) Take out the thermistor.	

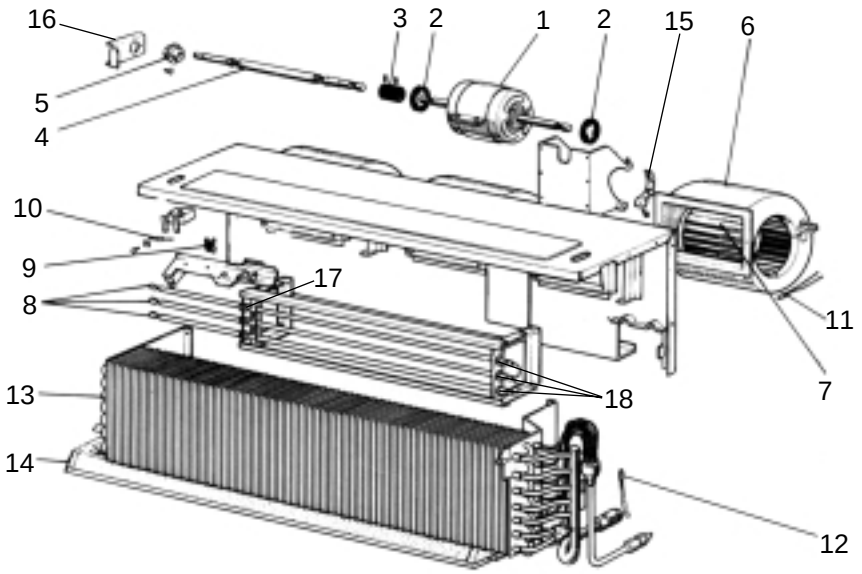
14 PARTS LIST

PCH24EK PCH30EK PCH36EK PCH42EK ELECTRICAL PARTS
PCH24EK$_1$ PCH30EK$_1$ PCH36EK$_1$ PCH42EK$_1$



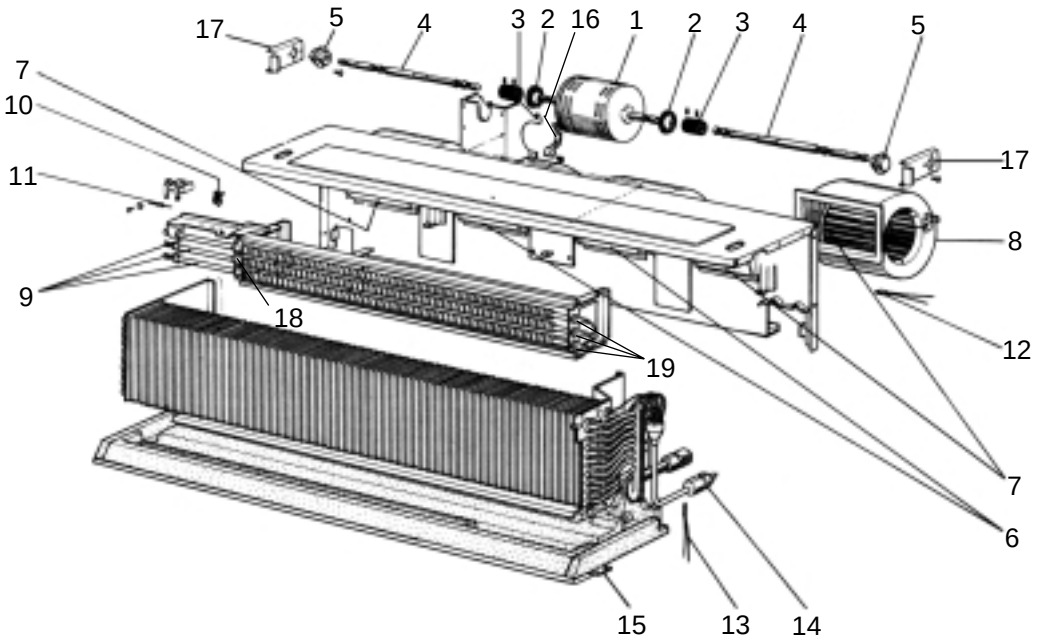
No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set PCH 24 EK	24 EK$_1$	30 EK	30 EK$_1$	36 EK	36 EK$_1$	42 EK	42 EK$_1$	Remarks	Circuit Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	R01 L72 310	INDOOR CONTROLLER BOARD		1		1		1		1			I.B			
	T7W E06 310	INDOOR CONTROLLER BOARD			1		1		1		1		I.B			
2	T7W 410 239	FUSE	250V 6A	1	1	1	1	1	1	1	1		F			
3	T7W 829 070	CONTROLLER CASE		1	1	1	1	1	1	1	1					
4	T7W 430 260	TRANSFORMER	RED:15.5VAC, 0.3A BRN:11.0VAC, 0.6A	1	1	1	1	1	1	1	1		T			
5	T7W 045 255	FAN MOTOR CAPACITOR	3.5μF 500V	1	1	1	1						C			
	T7W 055 255	FAN MOTOR CAPACITOR	4μF 500V					1	1	1	1		C			
6	R01 556 246	TERMINAL BLOCK	TO REMOTE CONTROLLER 2P (1,2)	1		1		1		1			TB3			
	T7W E02 716	TERMINAL BLOCK	TO REMOTE CONTROLLER 2P (1,2)		1		1		1		1		TB3			
7	R01 377 246	TERMINAL BLOCK	TO OUTDOOR 3P (1,2,3)	1	1	1	1	1	1	1	1		TB2			
8	R01 998 246	TERMINAL BLOCK	POWER SUPPLY 2P (L1,L2)	1	1	1	1	1	1	1	1		TB1			
9	T2W 359 342	HEATER CONTACTOR	LY-2F DC-12V 15A	1									88H			
	R01 673 215	HEATER CONTACTOR	LY-2F DC-12V 15A		1								88H			
	R01 479 215	HEATER CONTACTOR	LY-1F DC-12V 15A			2	2	2	2	2	2		88H1,2			
10	T7W 430 200	REMOTE CONTROLLER BOARD		1		1		1		1			R.B			
11	T7W E01 713	REMOTE CONTROLLER BOARD			1		1		1		1	PAR-JH250KUS	R.B			
12	T7W 351 077	REMOTE CONTROLLER COVER		1		1		1		1						
13	T7W E03 049	REMOTE CONTROLLER COVER			1		1		1		1					
14	R01 L72 095	SCREW CAP		1		1		1		1						
15	T7W 556 305	REMOTE CONTROLLER CABLE	39ft	1		1		1		1						
	T7W A00 305	REMOTE CONTROLLER CABLE	33ft		1		1		1		1					

PCH24EK PCH30EK FAN & HEATER PARTS
PCH24EK1 PCH30EK1



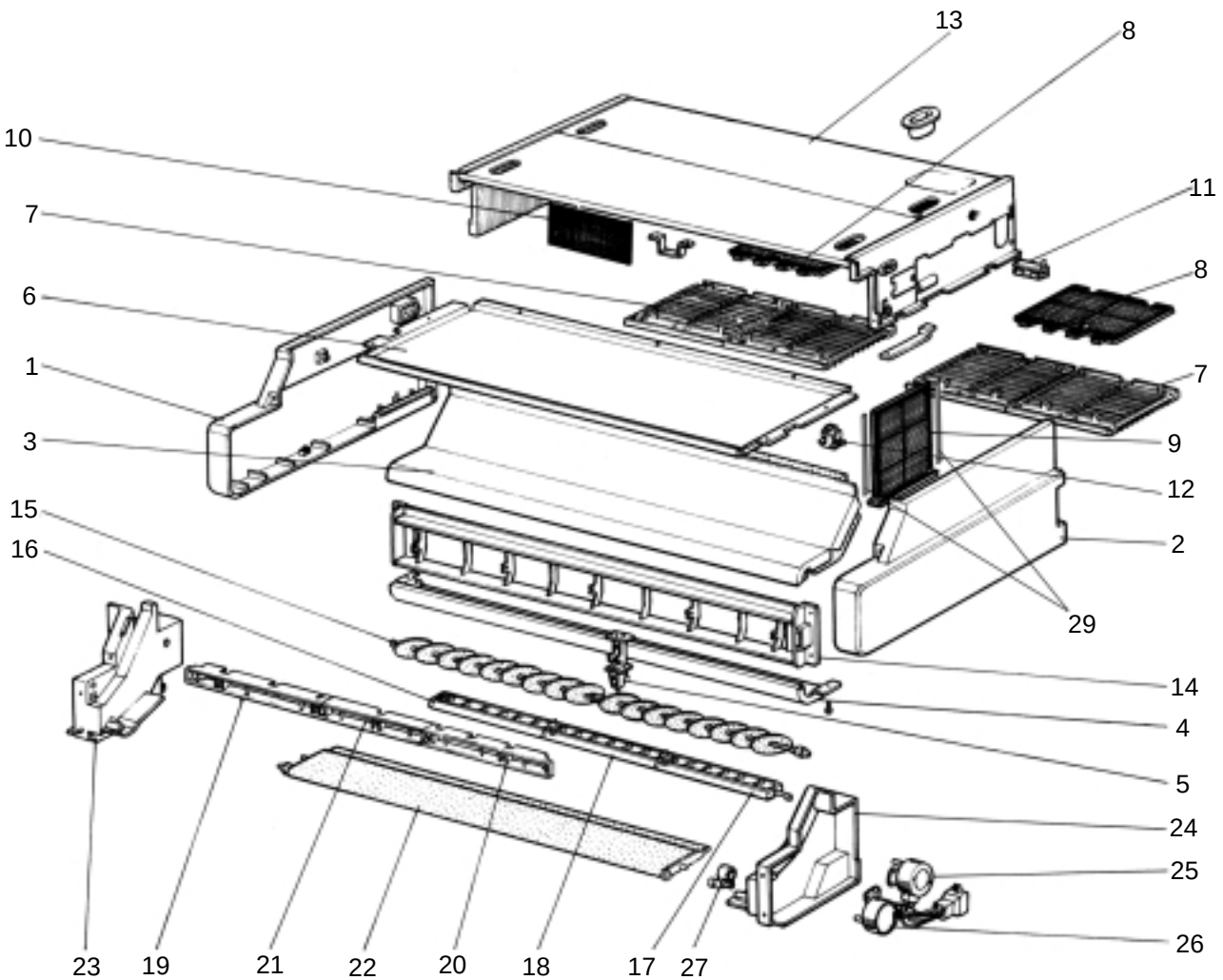
No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set PCH 24 EK	Q'ty/set PCH 24 EK1	Q'ty/set PCH 30 EK	Q'ty/set PCH 30 EK1	Remarks	Circuit Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	T7W 051 762	FAN MOTOR	VB090CE	1	1	1	1		MF			
2	R01 811 105	RUBBER MOUNT		2	2	2	2					
3	R01 700 116	JOINT (SHAFT)		1		1						
	R01 29J 116	JOINT (SHAFT)			1		1					
4	R01 G12 100	FAN SHAFT		1	1	1	1					
5	R01 621 103	SLEEVE BEARING		1	1	1	1					
6	R01 055 110	CASING SET		3		3						
	T7W E02 110	CASING SET			3		3					
7	R01 G18 114	SIROCCO FAN		3		3						
	T7W E00 114	SIROCCO FAN			3		3					
8	T7W 503 300	HEATER ELEMENT	240V 700W	3	3				H			
	T7W 051 300	HEATER ELEMENT	240V 900W			3			H			
	T7W 507 300	HEATER ELEMENT	240V 900W				3		H			
9	R01 046 700	HEATER THERMAL SWITCH	OFF 108˚F ON 80˚F	1	1	1	1		26H			
10	R01 046 706	THERMAL FUSE	196˚F 250V 15A	1	1				FS			
	R01 W58 706	THERMAL FUSE	230˚F 250V 16A			1			FS			
	T7W 23J 706	THERMAL FUSE	230˚F 250V 16A				1		FS			
11	R01 J07 202	ROOM TEMPERATURE THERMISTOR		1	1	1	1		RT1,TH1			
12	R01 J21 202	INDOOR COIL THERMISTOR		1		1			RT2			
	T7W E17 202	PIPE TEMPERATURE THERMISTOR			1		1		TH2			
13	T7W 430 480	INDOOR HEAT EXCHANGER		1	1							
	T7W 431 480	INDOOR HEAT EXCHANGER				1	1					
14	T7W 051 529	DRAIN PAN		1	1	1	1					
15	R01 83E 126	PIECE (MOTOR)		1	1	1	1					
16	R01 G24 145	BEARING SUPPORT		1	1	1	1					
17	R01 20J 303	INSULATOR		1	1	1	1					
18	R01 30J 303	INSULATOR		3	3	3	3					

PCH36EK PCH42EK FAN & HEATER PARTS
PCH36EK1 PCH42EK1



No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set PCH 36 EK	Q'ty/set PCH 36 EK1	Q'ty/set PCH 42 EK	Q'ty/set PCH 42 EK1	Remarks	Circuit Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	T7W 055 762	FAN MOTOR	KVB152CC	1	1	1	1		MF			
2	R01 560 105	RUBBER MOUNT		2	2	2	2					
3	R01 700 116	JOINT (SHAFT)		2		2						
	R01 29J 116	JOINT (SHAFT)			2		2					
4	R01 G24 100	FAN SHAFT		2	2	2	2					
5	R01 705 103	SLEEVE BEARING		2	2	2	2					
6	R01 G18 114	SIROCCO FAN		2		2						
	T7W E00 114	SIROCCO FAN			2		2					
7	R01 G24 114	SIROCCO FAN		2		2						
	T7W E01 114	SIROCCO FAN			2		2					
8	R01 055 110	CASING SET		4		4						
	T7W E02 110	CASING SET			4		4					
9	T7W 509 300	HEATER ELEMENT	240V 1000W	3	3	3	3		H			
10	R01 046 700	HEATER THERMAL SWITCH	OFF 108˚F ON 80˚F	1	1	1	1		26H			
11	R01 986 706	THERMAL FUSE	219˚F 250V 10A	2	2				FS			
	R01 W58 706	THERMAL FUSE	230˚F 250V 16A			1			FS			
	T7W 23J 706	THERMAL FUSE	230˚F 250V 16A				1		FS			
12	R01 J07 202	ROOM TEMPERATURE THERMISTOR		1	1	1	1		RT1,TH1			
13	R01 J21 202	INDOOR COIL THERMISTOR		1		1			RT2			
	T7W E17 202	PIPE TEMPERATURE THERMISTOR			1		1		TH2			
14	T7W 432 480	INDOOR HEAT EXCHANGER		1	1							
	T7W 433 480	INDOOR HEAT EXCHANGER				1	1					
15	T7W 055 529	DRAIN PAN		1	1	1	1					
16	R01 830 126	PIECE (MOTOR)		1	1	1	1					
17	R01 G24 145	BEARING SUPPORT		2	2	2	2					
18	R01 20J 303	INSULATOR		1	1	1	1					
19	R01 30J 303	INSULATOR		3	3	3	3					

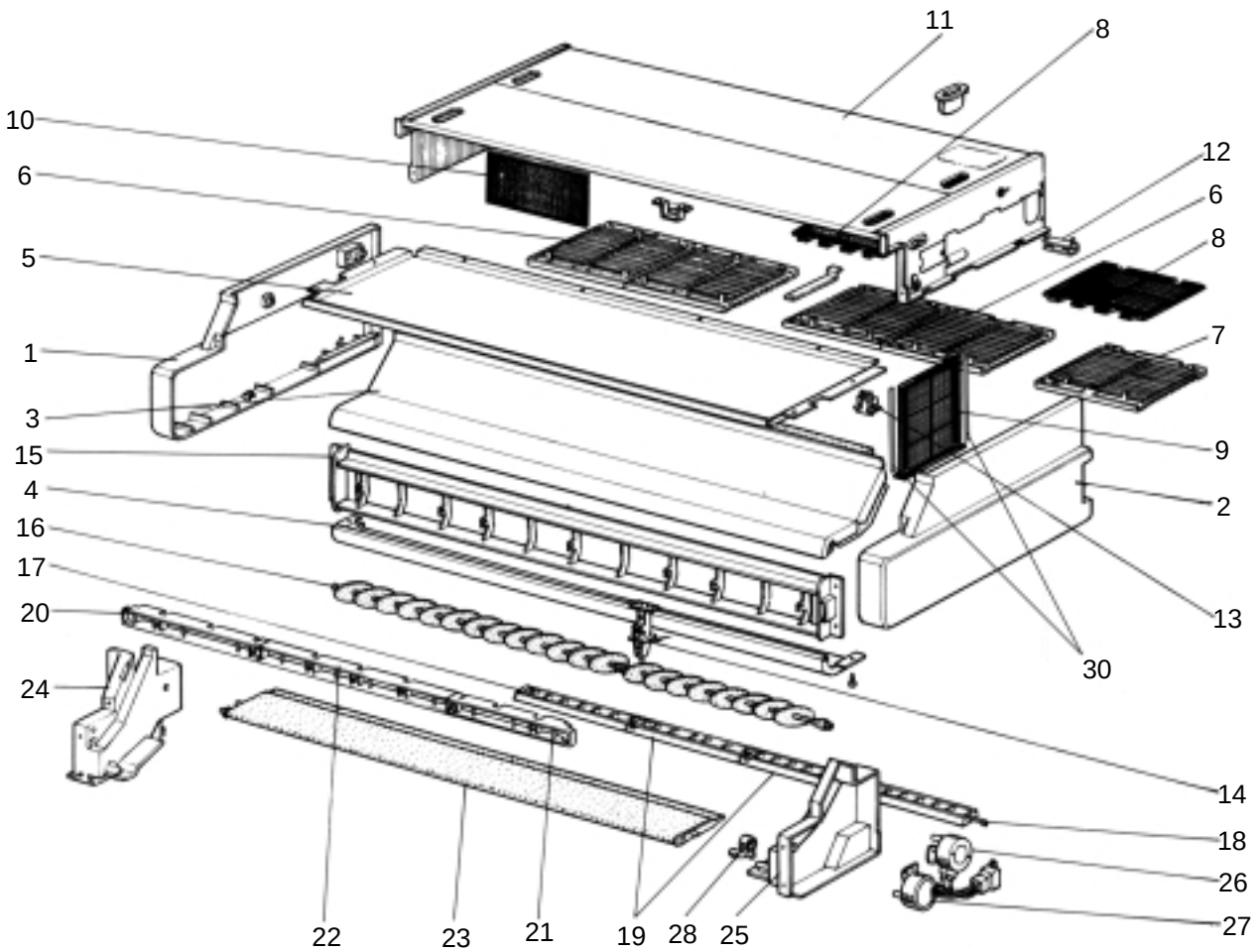
PCH24EK PCH30EK STRUCTURAL PARTS
PCH24EK1 PCH30EK1



Part number that is circled is not shown in the figure.

No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set				Remarks	Circuit Diagram Symbol	Recom-mended Q'ty	Price	
				PCH							Unit	Amount
				24		30						
				EK	EK1	EK	EK1					
1	R01 055 662	SIDE PANEL (LEFT)		1	1	1	1					
2	R01 055 661	SIDE PANEL (RIGHT)		1	1	1	1					
3	R01 051 651	FRONT PANEL (UPPER)		1	1	1	1					
4	R01 045 652	FRONT PANEL (LOWER)		1	1	1	1					
5	R01 045 048	LOUVER SUPPORT		1	1	1	1					
6	R01 051 669	LOWER PANEL		1	1	1	1					
7	R01 029 691	INTAKE GRILL		2	2	2	2					
8	R01 A25 500	AIR FILTER		4	4	4	4					
9	R01 055 501	AIR FILTER (SUB)		1	1	1	1					
10	T7W 051 501	AIR FILTER		1	1	1	1					
11	R01 029 061	GRILL HINGE		4	4	4	4					
12	R01 029 054	CATCH GRILL		4	4	4	4					
13	T7W 052 676	REAR & TOP PLATE		1	1	1	1					
14	R01 051 001	FRONT GRILL		1	1	1	1					
15	R01 045 003	SWING LOUVER		1	1	1	1					
16	R01 029 089	LOWER LOUVER (LEFT)		1	1	1	1					
17	R01 029 088	LOWER LOUVER (RIGHT)		1	1	1	1					
18	R01 045 090	LOWER LOUVER (MIDDLE)		1	1	1	1					
19	R01 029 086	FRONT LOUVER (LEFT)		1	1	1	1					
20	R01 029 085	FRONT LOUVER (RIGHT)		1	1	1	1					
21	R01 045 087	FRONT LOUVER (MIDDLE)		1	1	1	1					
22	R01 051 002	AUTO VANE		1	1	1	1					
23	R01 055 068	SIDE BOX (LEFT)		1	1	1	1					
24	R01 055 067	SIDE BOX (RIGHT)		1	1	1	1					
25	R01 029 222	LOUVER MOTOR		1		1			ML			
	T7W E01 222	LOUVER MOTOR			1		1		ML			
26	T7W 029 223	VANE MOTOR		1	1	1	1		MV			
27	R01 029 060	CRANK VANE		1	1	1	1					
㉘	R01 045 808	LEG		2	2	2	2					
29	R01 82E 656	FILTER GUIDE		1	1	1	1					

PCH36EK PCH42EK STRUCTURAL PARTS
PCH36EK1 PCH42EK1



Part number that is circled is not shown in the figure.

No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set				Remarks	Circuit Diagram Symbol	Recommended Q'ty	Price	
				PCH							Unit	Amount
				36		42						
				EK	EK1	EK	EK1					
1	R01 055 662	SIDE PANEL (LEFT)		1	1	1	1					
2	R01 055 661	SIDE PANEL (RIGHT)		1	1	1	1					
3	R01 055 651	FRONT PANEL (UPPER)		1	1	1	1					
4	R01 055 652	FRONT PANEL (LOWER)		1	1	1	1					
5	R01 055 669	LOWER PANEL		1	1	1	1					
6	R01 029 691	INTAKE GRILL		2	2	2	2					
7	R01 029 692	INTAKE GRILL (2)		1	1	1	1					
8	R01 A25 500	AIR FILTER		5	5	5	5					
9	R01 055 501	AIR FILTER (SUB)		1	1	1	1					
10	T7W 051 501	AIR FILTER		1	1	1	1					
11	T7W 056 676	REAR & TOP PLATE		1	1	1	1					
12	R01 029 061	GRILL HINGE		6	6	6	6					
13	R01 029 054	GRILL CATCH		5	5	5	5					
14	R01 045 048	LOUVER SUPPORT		1	1	1	1					
15	R01 055 001	FRONT GRILL		1	1	1	1					
16	R01 055 003	SWING LOUVER		1	1	1	1					
17	R01 029 089	LOWER LOUVER (LEFT)		1	1	1	1					
18	R01 029 088	LOWER LOUVER (RIGHT)		1	1	1	1					
19	R01 045 090	LOWER LOUVER (MIDDLE)		2	2	2	2					
20	R01 029 086	FRONT LOUVER (LEFT)		1	1	1	1					
21	R01 029 085	FRONT LOUVER (RIGHT)		1	1	1	1					
22	R01 055 087	FRONT LOUVER (MIDDLE)		1	1	1	1					
23	R01 055 002	AUTO VANE		1	1	1	1					
24	R01 055 068	SIDE BOX (LEFT)		1	1	1	1					
25	R01 055 067	SIDE BOX (RIGHT)		1	1	1	1					
26	R01 029 222	LOUVER MOTOR		1		1			ML			
	T7W E01 222	LOUVER MOTOR			1		1		ML			
27	T7W 029 223	VANE MOTOR		1	1	1	1		MV			
28	R01 029 060	VANE CRANK		1	1	1	1					
㉙	R01 045 808	LEG		2	2	2	2					
30	R01 82E 656	FILTER GUIDE		1	1	1	1					

15 OPTIONAL PARTS

1. TIMER

When using a program timer, a program timer adapter (PAC-825AD) is also needed.
(PAC-825AD is included with PAC-SC32PTA.)

Part No.	PAC-SC32PTA (with set back function)
Model Name	Program timer

1-1 Program timer specifications

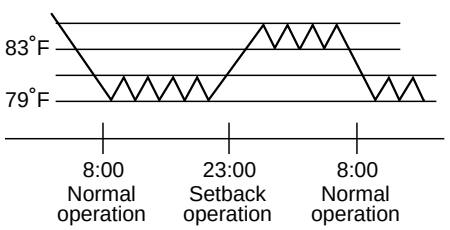
Parts name	Program timer
Parts No.	PAC-SC32PTA
Exterior dimensions (inch)	5-4/32x4-23/32x23/32 (130x120x18mm)
Installation	Wall mount
Type of clock	Quartz
Clock accuracy	±50 second / month at 77°F
Display-Time -Week -Timer setting unit	Liquid crystal display Liquid crystal display Liquid crystal display
Program cycle	24 hours
Timer setting unit	30 minutes
No. of set points	48 / day
Power rating	5V DC ±5% (Supplied by Remote Controller)

1-2 Feature of program timer

(1) Daily timer function
Daily timer can be set in 30 minutes units for up to 24 hours.
Each unit can be set for unit ON, unit OFF, or setback operation.

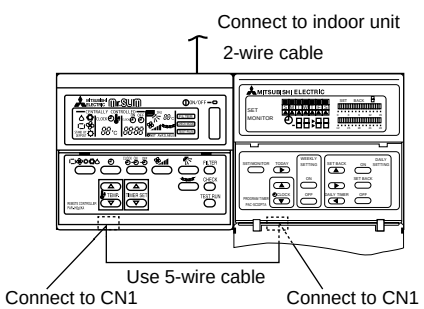
(2) Setback operation (PAC-SC32PTA)
Set back operation is useful for reducing running costs
e.g. At a hotel with a 24-hour system
8:00~23:00 Cooling operation with set temperature at 79°F
23:00~8:00 Setback operation with 4 degrees of setback
As shown in the chart on the right, the set temperature rises 4 degrees automatically during the setback operation. When the setback operation ends, normal operation will begin.

(3) Weekly timer function
Daily timer function can apply to each day of the week.



1-3 How to connect program timer

(1) Install the program timer next to the remote controller the same way as the remote controller is installed.
(2) Connect the program timer and the remote controller with a 5-wire cable as shown in the figure below



NOTE:While the program timer is connected to the remote controller, the 24hour ON/OFF timer on the remote controller will not operate.

1-4 Names and functions

<PAC-SC32PTA>

WEEKLY TIMER SETTING DISPLAY

Sets timer for a week.

CURRENT TIME DISPLAY

During MONITOR status,current time is display.
During Daily timer setting, a time desire for timer setting is displayed.

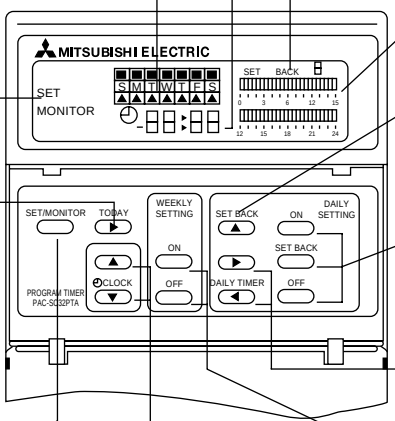
SET BACK DISPLAY

Indicates the set back range.

DAILY TIMER SETTING DISPLAY

24 hours is divided into 48 blocks and each block express 30 minutes.
The block display consists of 3 pattern.

Set back
1=2°F 2=4°F 4=8°F 6=12°F 8=16°F



SET BACK SETTING SW

Used for set back setting.

SET/MONITOR DISPLAY

When SET is displayed, clock adjustment, change of weekly day, daily and weekly timer setting can be performed.
During MONITOR is display, all switches except SET/MONITOR SW are invalidated. This is normal status.

ON/SET BACK/OFF SW

Used to specify the time setting pattern.

WEEK DAY SETTING SW

Used for week day setting.

DAILY TIMER SW

Used for timer setting in 30 minutes unit.

MODE SELECTOR SW

Using this switch select “MONITOR” or “SET” Mode.

“MONITOR” :Indicates the current timer setting. All switch expect MODE SELECTOR SW are invalidated then.This is the normal status.

“SET”: Set to “SET” mode for clock adjustment, charge of week day, daily and weekly timer setting.

CLOCK ADJUSTMENT SW

Used for adjustment of the current time.

Push ⏱ SW to advance the time. Each time the button is pushed the time advance by 1 minute, pushing continuously advances by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication advances in 10 minutes unit.

⏱ SW is used for reversing the time. Each time the button is pushed the time reverses by 1 minute, pushing continuously reverses the time by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication reverses in 10 minutes unit.

WEEKLY TIMER SW

Used for setting timer in day of week unit.

Pushing ⏱ SW moves the week day light display in order of
S → M → T → W ···
enabling to set the week day.

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