Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

No. OC291

# CITY MULTI Indoor Unit
# TECHNICAL & SERVICE MANUAL

## CITY MULTI Series Wall Mounted Type

[Models] PKFY-08NAMU-A
PKFY-12NGMU-A
PKFY-20NFMU-A
PKFY-32NFMU-A

## CITY MULTI Series Ceiling Cassettes Type

[Models] PLFY-12NAMU-A
PLFY-20NAMU-A
PLFY-24NAMU-A
PLFY-32NAMU-A
PLFY-40NAMU-A

CONTENTS



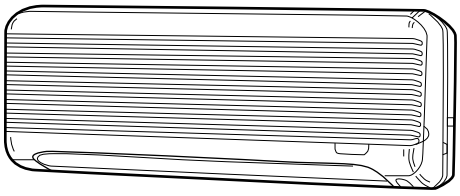
• Connected outdoor unit is **PURY-80TMU** or **PURY-100TMU**.

CITY MULTI

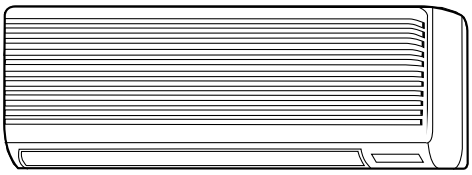
# PKFY-08NAMU-A
# PKFY-12NGMU-A
# PKFY-20NFMU-A
# PKFY-32NFMU-A

## CONTENTS

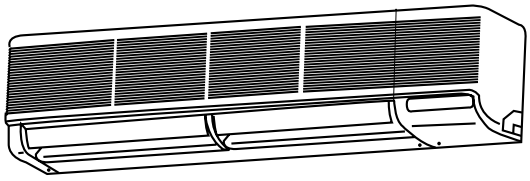
# 1 DIFFERENCES



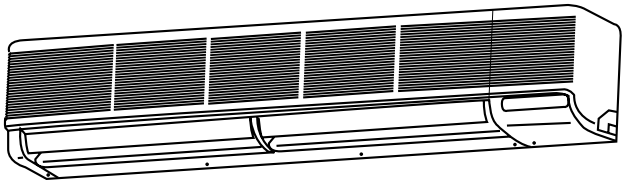
**PKFY-08NAMU-A**
**Indoor Unit**



**PKFY-12NGMU-A**
**Indoor Unit**



**PKFY-20NFMU-A**
**Indoor Unit**



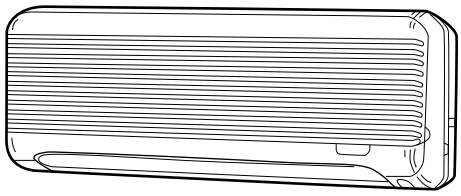
**PKFY-32NFMU-A**
**Indoor Unit**

## Differences among the models of PKFY series.

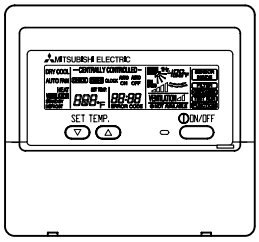
| Item | | | Model | PKFY- | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08NAMU-A | | | 12NGMU-A | | | 20NFMU-A | | | 32NFMU-A | | |
| Fan | | | — | Lineflow fan × 1 | | | Lineflow fan × 1 | | | Lineflow fan × 2 | | | | | |
| Fan speed | | | — | 4 speeds type | | | 4 speeds type | | | 2 speeds type | | | 2 speeds type | | |
| Air flow | High | | CFM | DRY | 210 | WET 190 | DRY | 410 | WET 370 | DRY | 640 | WET 570 | DRY | 990 | WET 890 |
| | Medium 1 | | CFM | DRY | 200 | WET 180 | DRY | 370 | WET 330 | DRY | — | WET — | DRY | — | WET — |
| | Medium 2 | | CFM | DRY | 180 | WET 170 | DRY | 340 | WET 300 | DRY | — | WET — | DRY | — | WET — |
| | Low | | CFM | DRY | 170 | WET 160 | DRY | 280 | WET 250 | DRY | 490 | WET 440 | DRY | 780 | WET 700 |
| Noise level | High | | dB | 36 | | | 42 | | | 45 | | | 49 | | |
| | Medium 1 | | dB | 35 | | | 40 | | | — | | | — | | |
| | Medium 2 | | dB | 33 | | | 36 | | | — | | | — | | |
| | Low | | dB | 32 | | | 32 | | | 39 | | | 46 | | |
| Out dimension | Height | | in. | 11-5/8 | | | 13-3/8 | | | 13-3/8 | | | | | |
| | Width | | in. | 32-3/32 | | | 39 | | | 55-1/8 | | | 66-1/8 | | |
| | Depth | | in. | 6-7/32 | | | 9-1/4 | | | 9-1/4 | | | | | |
| Controller board | SW2 | 1 | — | OFF | | | OFF | | | OFF | | | OFF | | |
| | | 2 | — | OFF | | | ON | | | ON | | | OFF | | |
| | | 3 | — | ON | | | ON | | | OFF | | | OFF | | |
| | | 4 | — | OFF | | | OFF | | | ON | | | OFF | | |
| | | 5 | — | — | | | OFF | | | OFF | | | ON | | |
| | | 6 | — | — | | | OFF | | | OFF | | | OFF | | |
| Pipe dimension | Gas side | | in. | 1/2" | | | 1/2" | | | 5/8" | | | | | |
| | Liquid side | | in. | 1/4" | | | 1/4" | | | 3/8" | | | | | |
| | Drain(unit side) | | in. | O.D. 5/8" | | | O.D. 13/16" | | | O.D. 13/16" | | | | | |

# 2 FEATURES

**PKFY-08NAMU-A**



**Indoor Unit**



**Microprocessor Remote controller**

| **Model** | **Cooling capacity / Heating capacity** |
|---|---|
| PKFY-08NAMU-A | 8,000/9,000 Btu/h |

## 2-1. New Compact Design

- Compact 11-5/8 inch (29.5cm) high body fits snugly in even limited spaces.
- Light weight 19lbs (8.5kg) unit easy to transport and install.

## 2-2. Auto-flap shutter Enhances good Looks

With a simple flick of the OFF switch the air outlet can be closed off with a shutter. The shutter also functions as a flap during operation to adjust the air flow angle, with “Auto Angle” securing a comfortable air flow.

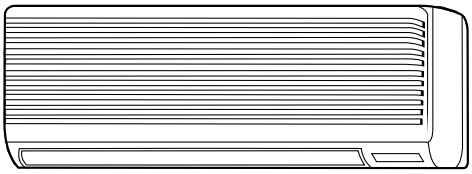
## 2-3. Front power supply box for easier wiring even after installation

The front power supply box allows electrical wiring work to be done after the indoor unit has been installed. For easier installation, all the screws required for securing the indoor unit to the wall are accessible from the front of the unit.

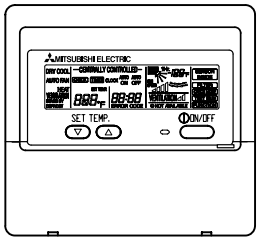
## 2-4. 4-way piping provides more flexibility in selecting installation sites

All piping including drainage can be connected from the rear, right, base, and left of the unit, providing much greater flexibility out piping and selecting installation site.

## PKFY-12NGMU-A



Indoor Unit




Microprocessor
Remote controller

| Model | Cooling capacity / Heating capacity |
|---|---|
| PKFY-12NGMU-A | 12,000 / 12,500 Btu/h |

### 2-1. New Compact Design

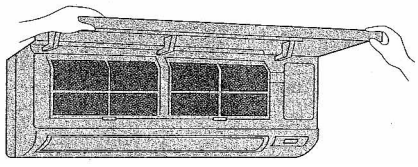
Units have now been downsized to require minimal wall space.
A 20% reduction in width 38-31/32 inch (990mm) compared to previous models means that installation is possible in very narrow spaces.

### 2-2. Auto-flap shutter Enhances Good Looks

With a simple flick of the OFF switch the air outlet can be closed off with a with a shutter. The shutter also functions as a flap during operation to adjust the air flow angle, with “Auto Angle” securing a comfortable air flow.

### 2-3. The Intake Grille Filter Can be Completely Removed Allowing Easy Cleaning (Can be washed in water)

**• Front grille opens out**



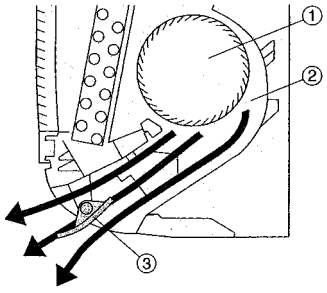
### 2-4. Quiet Operation

**•Airflow passage configuration that assures quiet operation**

① The unit incorporates a randompitch cycling fan.
By changing fan intervals, quiet operation is achieved without reduction in airflow. Optimal design of the airflow passage gives a shortened fan diameter and allows a highly compact installation.

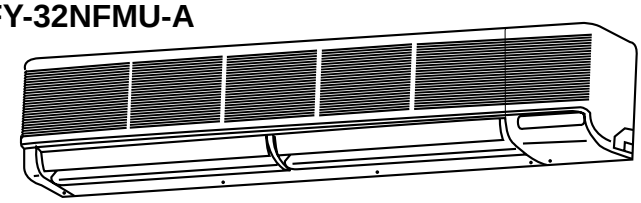
② Thanks to a highly practical casing configuration, airflow generated by the fan is distributed uniformly.

③ Due to careful positioning of the vertical vane axis, air is blown evenly from the outlet. This prevents mixing with secondary air and also suppresses condensation.

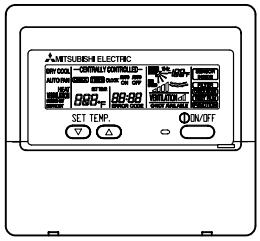



### 2-5. 4-way Piping Provides more Flexibility in Selecting Installation Sites

**PKFY-20NFMU-A**
**PKFY-32NFMU-A**



**Indoor Unit**




**Microprocessor**
**Remote controller**

| **Models** | **Cooling capacity / Heating capacity** |
|---|---|
| PKFY-20NFMU-A | 20,000 / 22,500 Btu/h |
| PKFY-32NFMU-A | 32,000 / 35,500 Btu/h |

## 2-1. COMPACT DESIGN

The PKFY series models have been downsized and now require such minimal wall space that they can even be installed above windows. For the PKFY series models, 14-9/16 inch (37 cm) of wall space between the ceiling and the window allows “above window” installation.

## 2-2. A FURTHER REFINEMENT OF COMFORT WITH NISE SUPPRESSION

Remarkably tow-noise operation has been achieved through the development of a “near -silent” fan and the design which minimises air flow resistance.

## 2-3. AUTO FLAP SHUTTER

With a simple flick of the OFF switch the air outlet can be closed off with a shutter. The shutter also functions as a flap during operation to adjust the air flow angle, with “Auto Angle” securing a comfortable air flow.

## 2-4. INSTALLATION : FAST AND ENDLESSLY ADAPTABLE

**(1) Multi-directional piping**

Multi directional drain and refrigerant piping radically improves flexibility in selecting installation layouts.
PKFY- • NFMU-A models boast refrigerant piping in 4 directions and drain piping 2 directions.

**(2) Back plate installation guide**

The back plate installation guide gives clear instructions on installation positions. The enlarged back plate secures the unit firmly to the wall, while the support piece which lifts the unit makes left side piping work much easier.

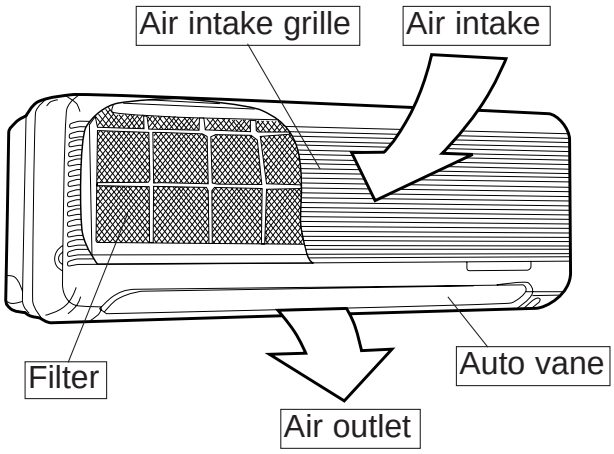
**(3) Easily removable filter**

The presence of thumbscrews on the filters means that the filters can be quickly and smoothly removed.

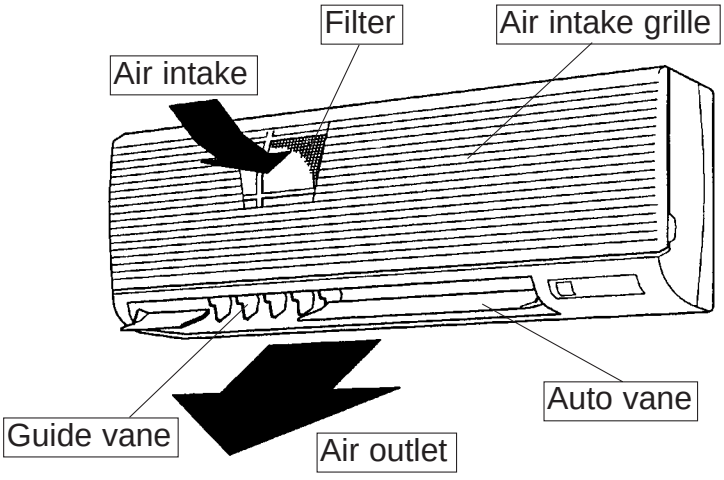
# 3 PART NAMES AND FUNCTIONS

● **Indoor Unit**

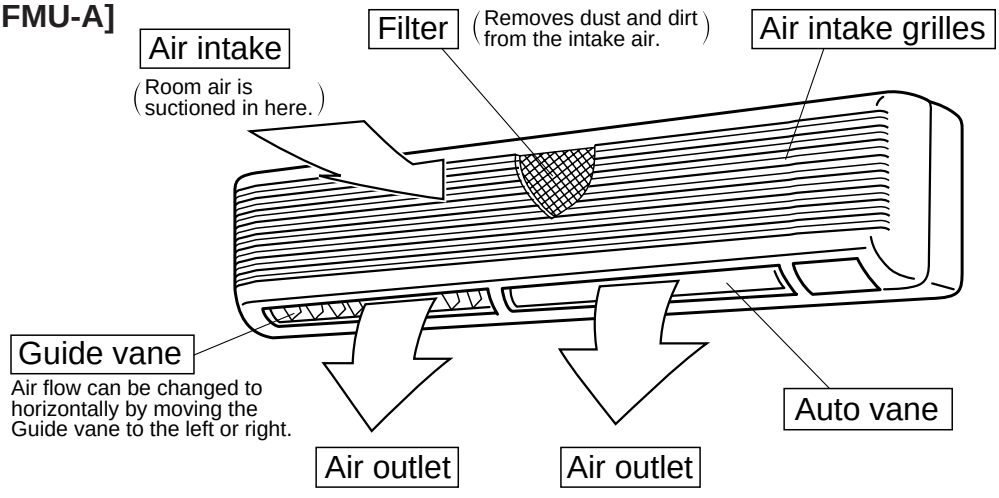
**[PKFY-08NAMU-A]**




**[PKFY-12NGMU-A]**



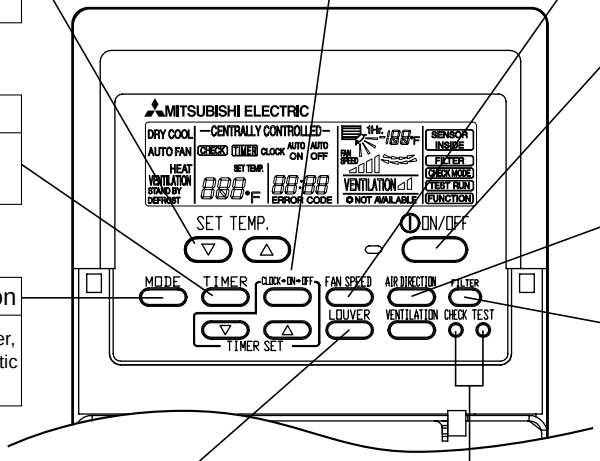

**[PKFY-20NFMU-A]**
**[PKFY-32NFMU-A]**



## ● Remote controller

● Once the operation of the unit is set, subsequent operations can only be performed by pressing the ON/OFF button repeatedly.

## ● Operation buttons




### TEMP. ADJUSTMENT button

This sets the room temperature. The temperature setting can be performed in 2°F units

Setting range

Cooler 67°F to 87°F

Heater 63°F to 83°F

### TIME SETTING button

This sets the current time, start time and stop time.

### AIR SPEED button

This sets the ventilation fan speed.

### ON/OFF button

This switches between the operation and stop modes each time it is pressed. The lamp on this button lights during operation.

### TIMER button

This switches between continuous operation and the timer operation.

### AIR DIRECTION button

This adjusts the vertical angle of the ventilation.

### OPERATION SWITCH button

Press this button to switch the cooler, electronic dry (dehumidify), automatic and heater modes.

### FILTER button

This resets the filter service indication display

### LOUVER button

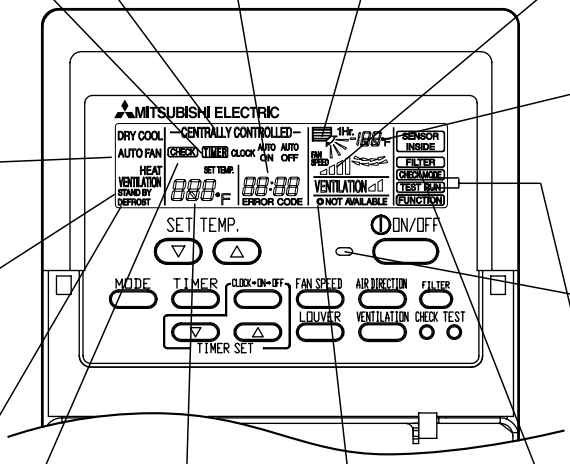
This switch the horizontal fan motion ON and OFF.

(Not available for this model.)

### CHECK-TEST RUN button

Only press this button to perform an inspection check or test operation. Do not use it for normal operation.

## ● 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 DIRECTION 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.

**AIR SPEED display**

The selected fan speed is displayed.

**ROOM TEMPERATURE display**

The temperature of the return air is displayed during operation. The display range is 46°F to 102°F. The display flashes 46°F when the actual temperature is less than 46°F and flashes 102°F when the actual temperature is greater than 102°F.

**OPERATION MODE display**

This indicates the operation mode.

**STANDBY display**

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

**Operation lamp**

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

**CHECK MODE / TEST RUN display**

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

**DEFROST display**

This indicates when the defrost operation is performed.

**FILTER display**

This lamp lights when the filter need to be cleaned.

**CHECK display**

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

**SET TEMPERATURE display**

This displays the selected set temperature.

**POWER display**

This lamp lights when electricity is supplied to the unit.

**Caution**

- Only the Power display lights when the unit is stopped and power supplied to the unit.
- When the central control remote control unit, which is sold separately, is used the ON-OFF button, operation switch button and TEMP. adjustment button do not operate.
- “NOT AVAILABLE” is displayed when the Air speed button is pressed. This indicates that this room unit is not equipped with the fan direction adjustment function and the louver function.
- When power is turned ON for the first time, it is normal that “H0” is displayed on the room temperature indication (For max. 2minutes). Please wait until this “H0” indication disappear then start the operation.

# 4 SPECIFICATIONS

## 4-1. Specifications
### PKFY-08NAMU-A

| Item | | | Unit | PKFY-08NAMU-A |
|---|---|---|---|---|
| Power | | | $\phi$,V,Hz | Single phase, 208/230V, 60Hz |
| Cooling capacity | | | Btu/h | 8,000 |
| Heating capacity | | | Btu/h | 9,000 |
| Electric characteristic | Power Supply | Cooling | kW | 0.03 |
| | | Heating | kW | 0.03 |
| | Starting Current | Cooling | A | 0.15 |
| | | Heating | A | 0.15 |
| Exterior <munsell symbol> | | | — | Plastic munsell : <2.60Y 8.66/0.69> |
| Out dimensions | | Height | in. | 11-5/8 |
| | | Width | in. | 32-3/32 |
| | | Depth | in. | 6-7/32 |
| Heat exchanger | | | — | Cross fin |
| Fan | Fan × No. | | — | Lineflow fan × 1 |
| | Air flow ※2 | DRY | CFM | 170-180-200-210 |
| | | WET | CFM | 160-170-180-190 |
| | External static pressure | | Pa | 0 |
| | Fan motor output | | kW | 0.008 |
| Insulator | | | — | Polyethylene sheet |
| Air filter | | | — | PP honey comb |
| Pipe dimensions | | Gas side | in. | 1/2" |
| | | Liquid side | in. | 1/4" |
| Unit drain pipe size | | | in. | PVC pipe with O.D. 5/8" |
| Noise level ※2 | | | dB | 32-33-35-36 |
| Product weight | | | lbs | 19 |

**Note 1.** Rating conditions

| | | | |
|---|---|---|---|
| Cooling : | Indoor | D.B. 80˚F | W.B. 67˚F |
| | Outdoor | D.B. 95˚F | W.B. 75˚F |
| Heating : | Indoor | D.B. 70˚F | |
| | Outdoor | D.B. 47˚F | W.B. 43˚F |

**※ 2.** Air flow and the noise level are indicated as Low - Medium2 - Medium1 - High.

• Connected outdoor unit is PURY-80TMU or PURY-100TMU.

## PKFY-12NGMU-A

| Item | | | Unit | PKFY-12NGMU-A |
|---|---|---|---|---|
| Power | | | $\phi$,V,Hz | Single phase, 208/230V, 60Hz |
| Cooling capacity | | | Btu/h | 12,000 |
| Heating capacity | | | Btu/h | 12,500 |
| Electric characteristic | Input | Cooling | kW | 0.07 |
| | | Heating | kW | 0.07 |
| | Current | Cooling | A | 0.34 |
| | | Heating | A | 0.34 |
| Exterior <munsell symbol> | | | — | Plastic , white : <0.70Y 8.59/0.97> |
| Out dimensions | | Height | in. | 13-3/8 |
| | | Width | in. | 39 |
| | | Depth | in. | 9-1/4 |
| Heat exchanger | | | — | Cross fin (Aluminum plate fin and copper tube) |
| Fan | Fan × No. | | — | Lineflow fan × 1 |
| | Air flow ※2 | DRY | CFM | 280-340-370-410 |
| | | WET | CFM | 250-300-330-370 |
| | External static pressure | | Pa | 0 |
| | Fan motor output | | kW | 0.03 |
| Insulator | | | — | Polyethylene sheet |
| Air filter | | | — | PP honey comb |
| Pipe dimensions | | Gas side | in. | 1/2" |
| | | Liquid side | in. | 1/4" |
| Unit drain pipe size | | | in. | PVC pipe with O.D. 13/16" |
| Noise level ※2 | | | dB | 32-36-40-42 |
| Product weight | | | lbs | 35 |

Note 1. Rating conditions
Cooling : Indoor : D.B. 80°F W.B. 67°F
outdoor : D.B. 95°F W.B. 75°F
Heating : Indoor : D.B. 70°F
outdoor : D.B. 47°F W.B. 43°F

※2. Air flow and the noise level are indicated as Low - Medium2 - Medium1 - High.

• Connected outdoor unit is PURY-80TMU or PURY-100TMU.

## PKFY-20NFMU-A
## PKFY-30NFMU-A

| Item | | | Unit | PKFY-20NFMU-A | PKFY-32NFMU-A |
|---|---|---|---|---|---|
| Power source | | | ϕ,V,Hz | Single phase, 208V-220V, 60Hz | |
| Cooling capacity | | | Btu/h | 20,000 | 32,000 |
| Heating capacity | | | Btu/h | 22,500 | 35,500 |
| Electric characteristic | Input | Cooling | kW | 0.09 | 0.12 |
| | | Heating | kW | 0.09 | 0.12 |
| | Current | Cooling | A | 0.44 | 0.58 |
| | | Heating | A | 0.44 | 0.58 |
| Exterior <munsell symbol> | | | — | Plastic , white : <3.4Y 7.7/0.8> | |
| Dimensions | | Height | in. | 13-3/8 | |
| | | Width | in. | 55-1/8 | 66-1/8 |
| | | Depth | in. | 9-1/4 | |
| Heat exchanger | | | — | Cross fin(Aluminum plate fin and copper tube) | |
| Fan | Type × No. | | — | Lineflow fan × 2 | |
| | Air flow Low - High | DRY | CFM | 490 - 640 | 780 - 990 |
| | | WET | CFM | 440 - 570 | 700 - 890 |
| | External static pressure | | Pa | 0 | |
| | Fan motor output | | kW | 0.045 | 0.070 |
| Insulator | | | — | Polyethylene sheet | |
| Air filter | | | — | PP Honeycomb fabric | |
| Pipe dimensions | | Gas side | in. | 5/8" | |
| | | Liquid side | in. | 3/8" | |
| Unit drain pipe dimension | | | in. | PVC pipe with O.D. 13/16" | |
| Noise level Low - High | | | dB | 39 - 45 | 46 - 49 |
| Product weight | | | lbs | 53 | 62 |

Note 1. Rating conditions

Cooling : Indoor : D.B. 80°F W.B. 67°F
outdoor : D.B. 95°F W.B. 75°F
Heating : Indoor : D.B. 70°F
outdoor : D.B. 47°F W.B. 43°F

• Connected outdoor unit is PURY-80TMU or PURY-100TMU.

## 4-2. Electrical parts specifications
## PKFY-08NAMU-A

| Model / Parts name | Symbol | PKFY-08NAMU-A |
|---|---|---|
| Room temperature thermistor | TH21 | Resistance 30˚F/15.8kΩ, 50˚F/9.6kΩ, 70˚F/6.0kΩ, 80˚F/4.8kΩ, 90˚F/3.9kΩ, 100˚F/3.2kΩ |
| Liquid pipe thermistor | TH22 | Resistance 30˚F/15.8kΩ, 50˚F/9.6kΩ, 70˚F/6.0kΩ, 80˚F/4.8kΩ, 90˚F/3.9kΩ, 100˚F/3.2kΩ |
| Gas pipe thermistor | TH23 | Resistance 30˚F/15.8kΩ, 50˚F/9.6kΩ, 70˚F/6.0kΩ, 80˚F/4.8kΩ, 90˚F/3.9kΩ, 100˚F/3.2kΩ |
| Fuse (Indoor power board) | FUSE | 250V 6A |
| Fan motor (with thermal fuse) | MF | 4-Pole Output 8W / PS4N8 |
| Fan motor capacitor | C | 1.2μF × 440V |
| Vane motor (with limit switch) | MV | MSFBC20A03 DC12V |
| Linear expansion valve | LEV | DC12V Stepping motor drive<br>Port $\phi$3.2 (0~2000pulse) EDM-402ME |
| Power supply terminal block | TB2 | (L1, L2,GR) 250V 20A |
| Transmission terminal block | TB5 | (M1, M2) 250V 10A |

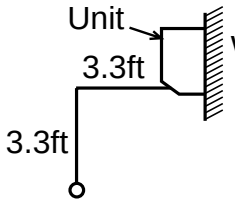
## PKFY-12NGMU-A

| Parts name \ Model | Symbol | PKFY-12NGMU-A |
|---|---|---|
| Room temperature thermistor | TH21 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ |
| Liquid pipe temperature thermistor | TH22 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ |
| Gas pipe temperature thermistor | TH23 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ |
| Fuse (Indoor controller board) | FUSE | 250V 6A |
| Fan motor (with inner-thermostat) | MF | PM4N30-KA 208V/230V 60Hz<br>4 pole Output 30W |
| | | Inner-thermostat: OPEN 257±9°F |
| Fan motor capacitor | C | 2.0μF 440V |
| Vane motor | MV | MP 35 EA DC12V |
| Linear expansion valve | LEV | DC12V Stepping motor drive<br>Port dimension $\phi$3.2 (0 ~ 2000pulse) |
| Power supply terminal block | TB2 | (L1, L2, GR) 330V 30A |
| Transmission terminal block | TB5 | (M1, M2, S) 250V 20A |
| MA remote controller terminal block | TB15 | (1,2) 250V 10A |

## PKFY-20NFMU-A
## PKFY-30NFMU-A

| Parts name \ Model | Symbol | PKFY-20NFMU-A | PKFY-32NFMU-A |
|---|---|---|---|
| Room temperature thermistor | TH21 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ | |
| Liquid pipe temperature thermistor | TH22 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ | |
| Gas pipe temperature thermistor | TH23 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ | |
| Fuse (Indoor controller board) | FUSE | 250V 6A | |
| Fan motor (with inner-thermostat) | MF | D094P45MS<br>208-230V 60Hz<br>4pole Output 45w | D10B4P70MS<br>208-230V 60Hz<br>4pole Output 70w |
| | | Inner-thermostat OPEN 266±9°F | |
| Fan motor capacitor | C | 2.5μF 440V | |
| Vane motor | MV | MP 35 EA DC12V | |
| Linear expansion valve | LEV | DC12V Stepping motor drive<br>Port dimension φ3.2 (0 ~ 2,000pulse) | DC12V Stepping motor drive<br>Port dimension φ5.2 (0 ~ 2,000pulse) |
| Power supply terminal block | TB2 | (L1, L2, GR) 330V 30A | |
| Transmission terminal block | TB5 | (M1, M2, S) 250V 20A | |
| MA remote controller terminal block | TB15 | (1,2) 250V 10A | |

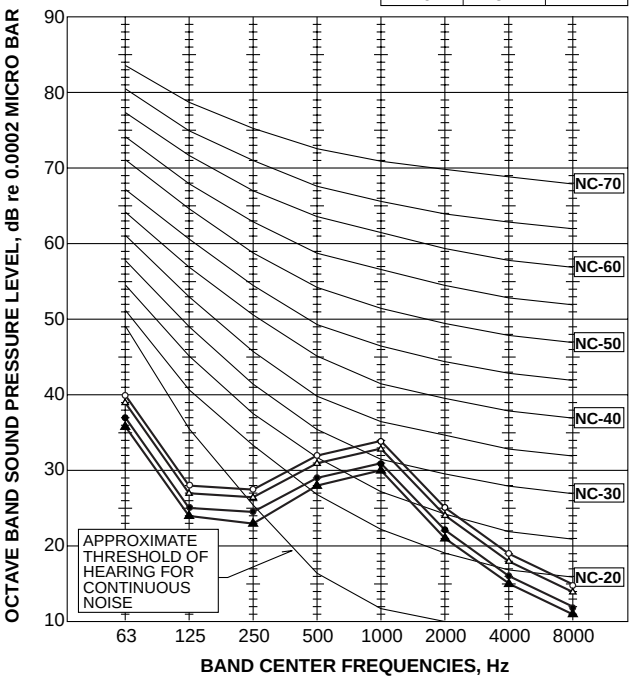
## 4-3. Noise criterion curves




Ambient temperature 80˚F
Test conditions are based on JIS Z8731

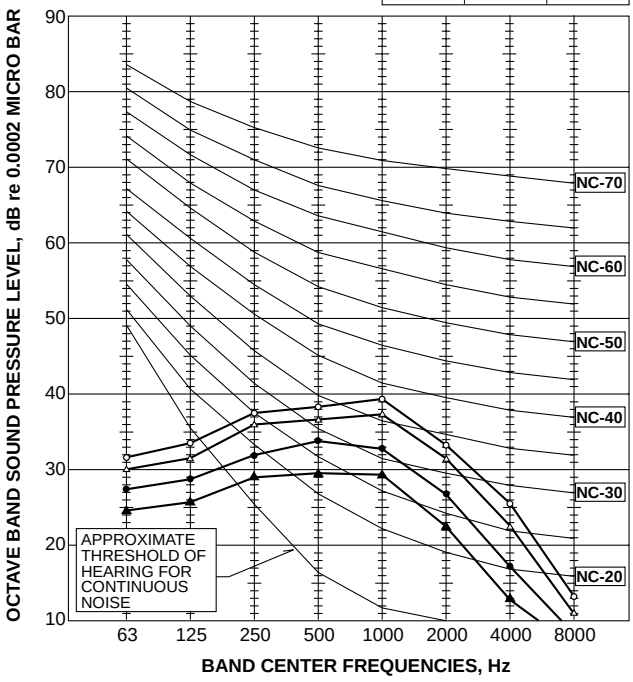
### PKFY-08NAMU-A

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 36 | |
| Med1 | 35 | |
| Med2 | 33 | |
| Lo | 32 | |



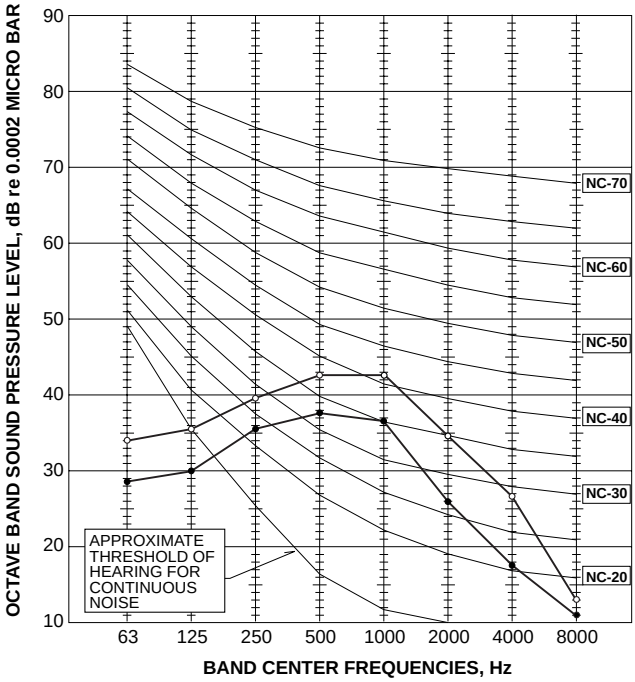

### PKFY-12NGMU-A

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 42 | |
| Med1 | 40 | |
| Med2 | 36 | |
| Lo | 32 | |



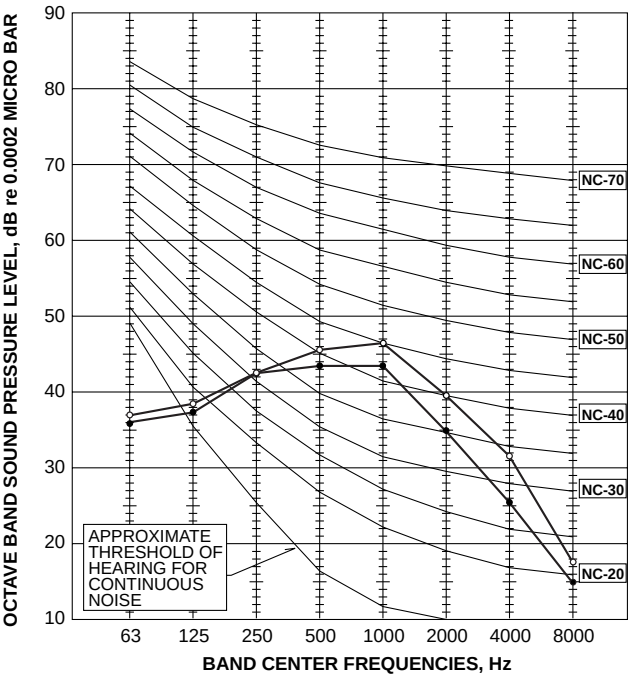

### PKFY-20NFMU-A

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 45 | |
| Lo | 39 | |




### PKFY-32NFMU-A

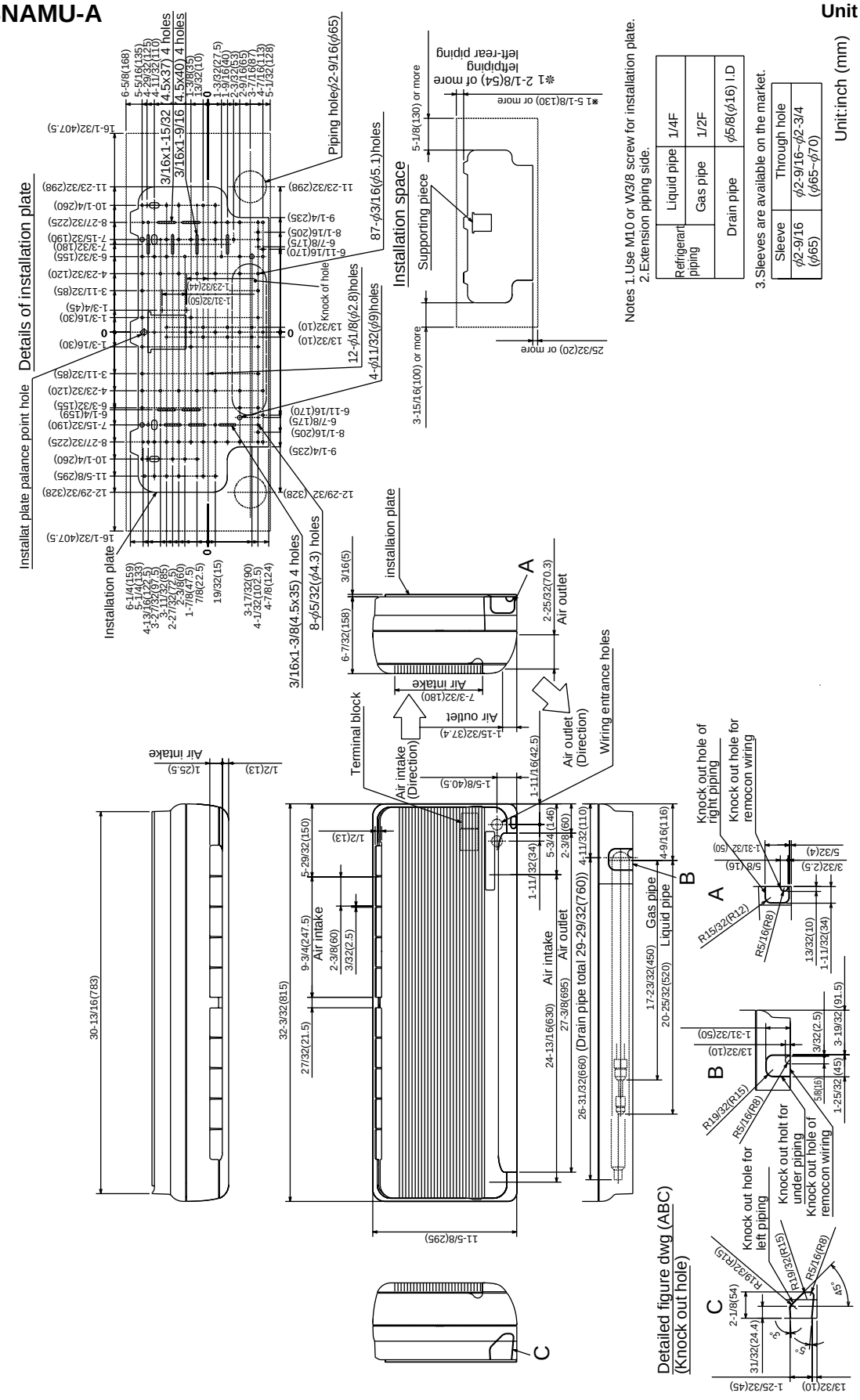
| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 49 | |
| Lo | 46 | |



# 5 OUTLINES AND DIMENSIONS

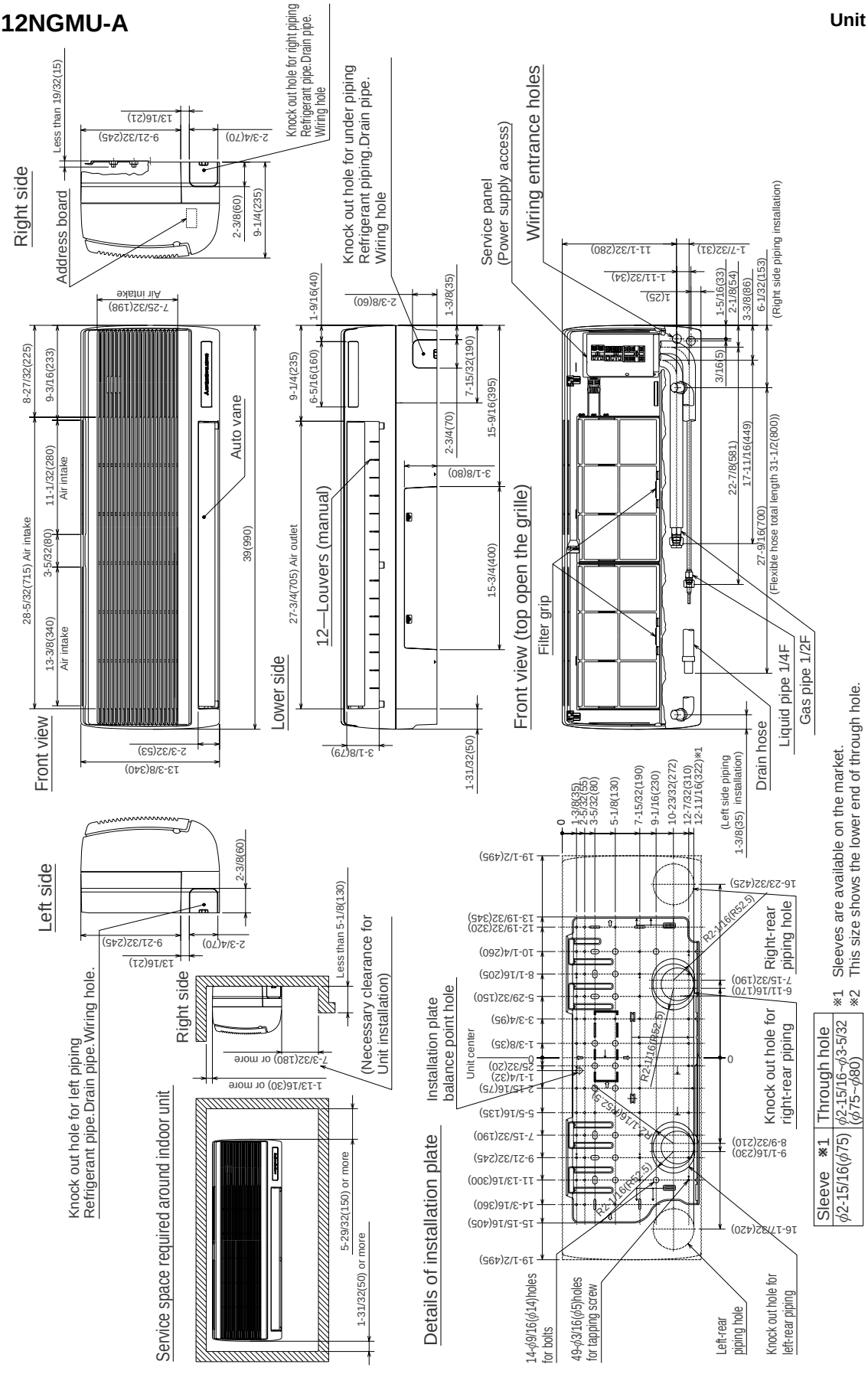
## PKFY-08NAMU-A

Unit : inch(mm)



## PKFY-12NGMU-A

Unit : inch(mm)



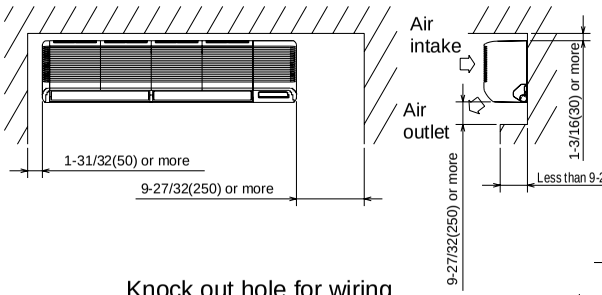

| Sleeve ※1 | Through hole |
|---|---|
| φ2-15/16(φ75) | φ2-15/16~φ3-5/32 (φ75~φ80) |

※1 Sleeves are available on the market.
※2 This size shows the lower end of through hole.

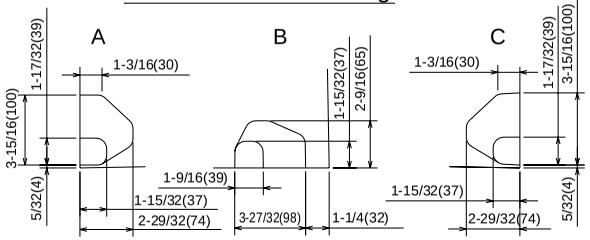
PKFY-20NFMU-A

OC292-19

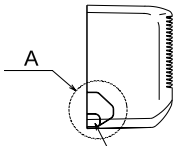
## Service space required around indoor unit



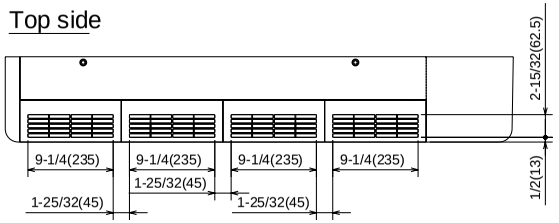

## Knock out hole for wiring



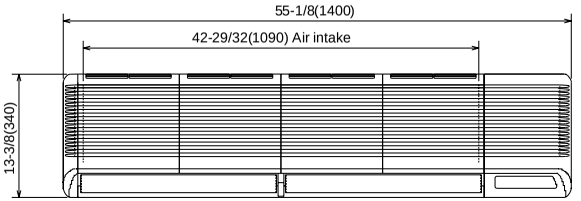

## Left side



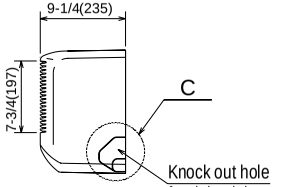

## Top side

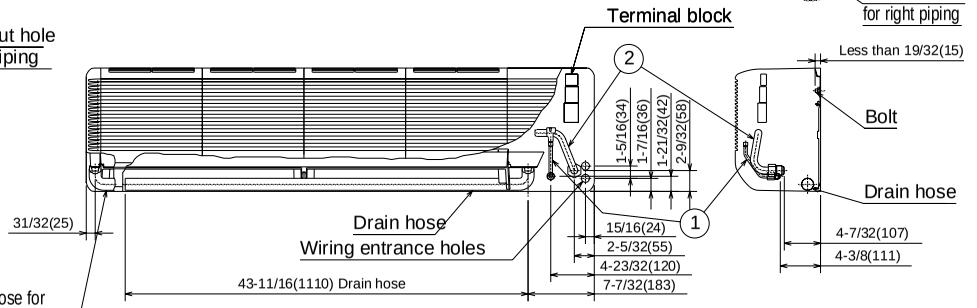



## Front view

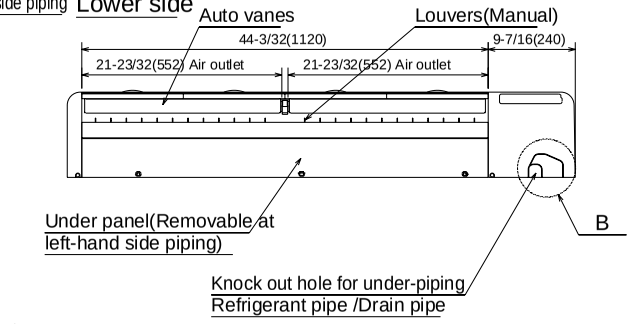



## Right side




## Lower side

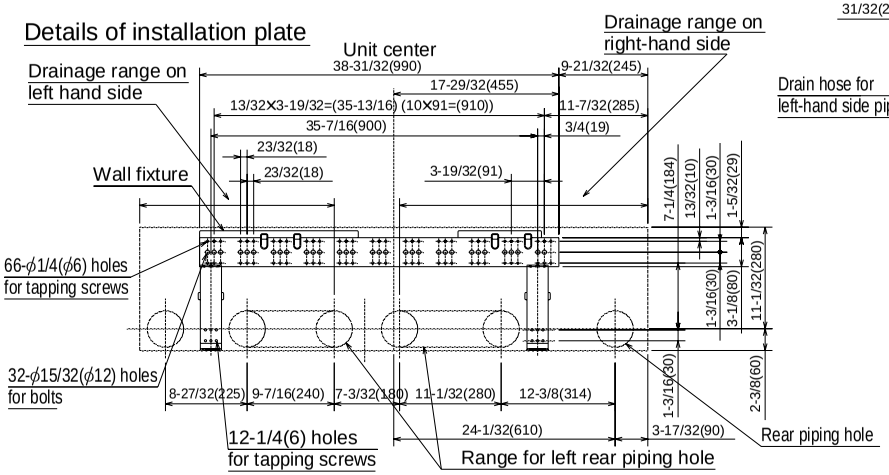



| | |
|---|---|
| ①Liquid pipe | 3/8F |
| ②Gas pipe | 5/8F |

| Sleeve ※1 | Through hole |
|---|---|
| $\phi$3-17/32 ($\phi$90) | $\phi$3-17/32~$\phi$3-15/16 ($\phi$90~$\phi$100) |

※1 Sleeves are available on the market.

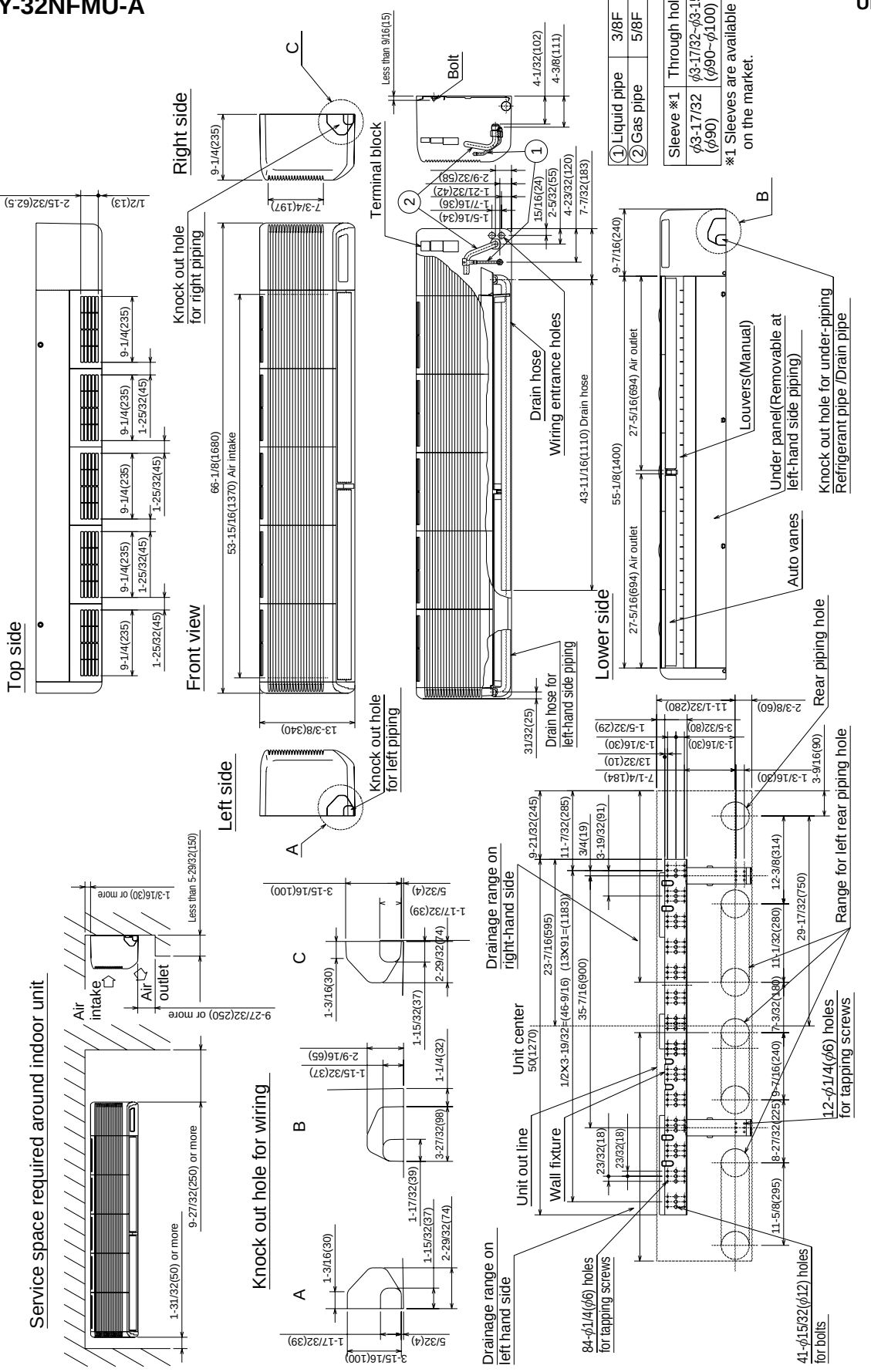
## Details of installation plate




Unit : inch(mm)

**PKFY-32NFMU-A**

**Unit : inch(mm)**

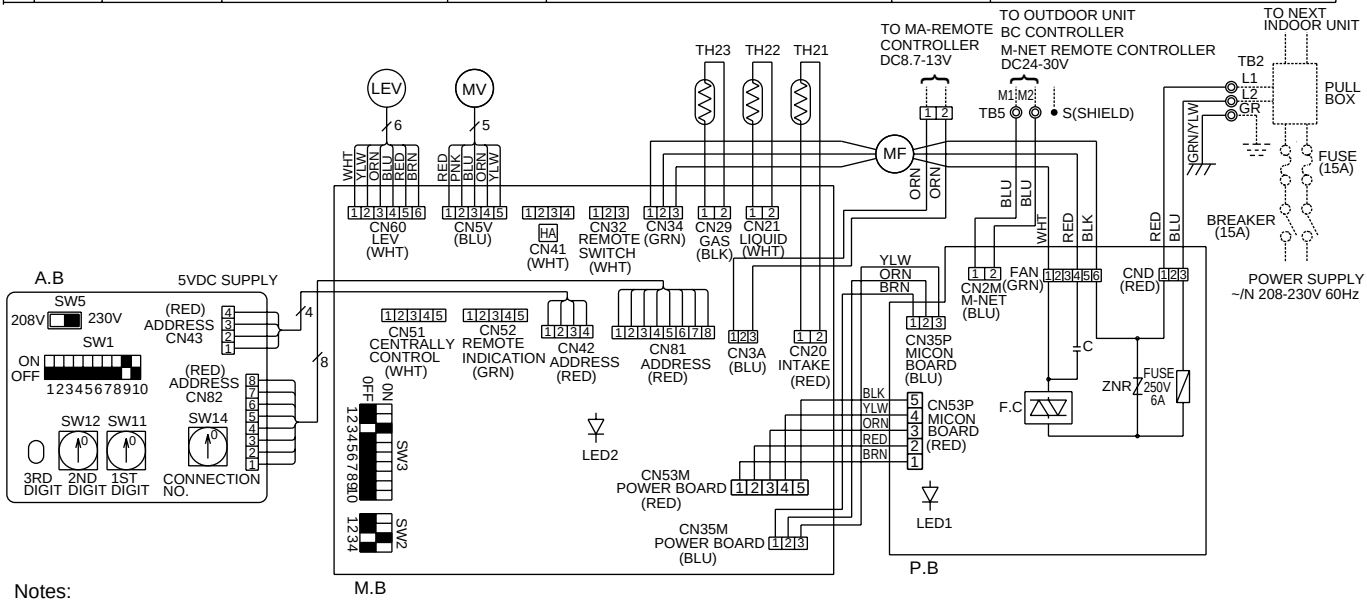


# 6 WIRING DIAGRAM

## PKFY-08NAMU-A

[LEGEND]

| SYMBOL | NAME | | SYMBOL | NAME | SYMBOL | NAME | |
|---|---|---|---|---|---|---|---|
| A.B | CIRCUIT BOARD (ADDRESS) | | P.B | INDOOR POWER BOARD | LEV | LINEAR EXPANSION VALVE | |
| SW1 | SWITCH | MODE SELECTION | C | CAPACITOR (FAN MOTOR) | MF | FAN MOTOR | |
| SW5 | | VOLTAGE SELECTION | F.C | FAN PHASE CONTROL | MV | VANE MOTOR | |
| SW11 | | ADDRESS SETTING 1ST DIGIT | FUSE | FUSE (6A/250V) | TB2 | TERMINAL BLOCK | POWER SUPPLY |
| SW12 | | ADDRESS SETTING 2ND DIGIT | ZNR | VARISTOR | TB5 | | TRANSMISSION |
| SW14 | | CONNECTION No. | | | TH21 | THERMISTOR | ROOM TEMPERATURE DETECTION (32°F/15kΩ,77°F/5.4kΩ) |
| M.B | INDOOR CONTROLLER BOARD | | | | TH22 | | PIPE TEMPERATURE DETECTION /LIQUID (32°F/15kΩ,77°F/5.4kΩ) |
| CN32 | CONNECTOR | REMOTE SWITCH | | | TH23 | | PIPE TEMPERATURE DETECTION /GAS (32°F/15kΩ,77°F/5.4kΩ) |
| CN41 | | HA TERMINAL-A | | | | | |
| CN51 | | CENTRALLY CONTROL | | | | | |
| CN52 | | REMOTE INDICATION | | | | | |
| SW2 | SWITCH | CAPACITY CODE | | | | | |
| SW3 | | MODE SELECTION | | | | | |




Notes:

1. At servicing for outdoor unit,always follow the wiring diagram of outdoor unit.
2. In case of connecting MA-Remote controller,please connect MA remote controller cable in an accessorie to the connector 1 2 .(Remote controller wire is non-polar.)
3. In case of using M-NET,please connect to TB5.(Transmission line is non-polar.)
4. Symbols used in wiring diagram above are, ◎:terminal block, □□□:connecter, ●:direct wire connection.
5. Please set the switch SW5 according to the power supply voltage.
   Set SW5 to 230V side when the power supply is 230 volts.
   When the power supply is 208 volts,set SW5 to 208V side.

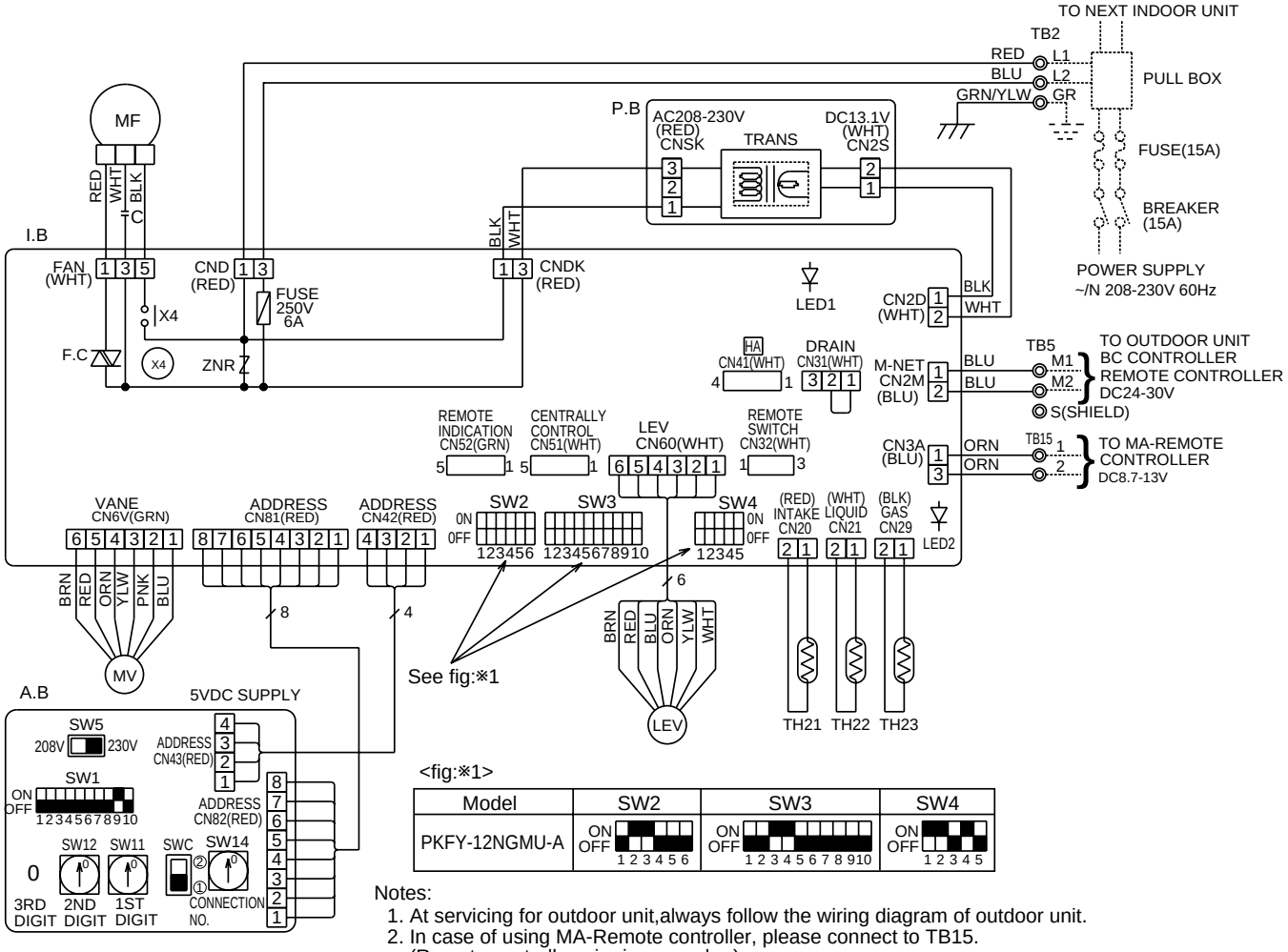
LED on indoor board for service

| Mark | Meaning | Function |
|---|---|---|
| LED1 | Main power supply | Main power supply(Indoor unit:208-230V) power on → lamp is lit |
| LED2 | Power supply for MA-Remote controller | Power supply for MA-Remote controller on → lamp is lit |

## PKFY-12NGMU-A

[LEGEND]

| SYMBOL | NAME | | SYMBOL | NAME | | SYMBOL | NAME | |
|---|---|---|---|---|---|---|---|---|
| I.B | INDOOR CONTROLLER BOARD | | C | CAPACITOR (FAN MOTOR) | | TH23 | THERMISTOR | PIPE TEMPERATURE DETECTION/GAS (32°F/15kΩ,77°F/5.4kΩ) |
| CN32 | CONNECTOR | REMOTE SWITCH | LEV | LINEAR EXPANSION VALVE | | | | |
| CN41 | | HA TERMINAL-A | MF | FAN MOTOR(WITH INNER THERMOSTAT) | | A.B | CIRCUIT BOARD (ADDRESS) | |
| CN51 | | CENTRALLY CONTROL | MV | VANE MOTOR | | SW1 | SWITCH | MODE SELECTION |
| CN52 | | REMOTE INDICATION | P.B | INDOOR POWER BOARD | | SW5 | | VOLTAGE SELECTION |
| F.C | FAN PHASE CONTROL | | TB2 | TERMINAL BLOCK | POWER SUPPLY | SW11 | | ADDRESS SETTING 1ST DIGIT |
| FUSE | FUSE (6A/250V) | | TB5 | | TRANSMISSION | SW12 | | ADDRESS SETTING 2ND DIGIT |
| SW2 | SWITCH | CAPACITY CODE | TB15 | | MA-REMOTE CONTROLLER | SW14 | | CONNECTION No. |
| SW3 | | MODE SELECTION | TH21 | THERMISTOR | ROOM TEMPERATURE DETECTION (32°F/15kΩ,77°F/5.4kΩ) | SWC | | OPTION SELECTOR |
| SW4 | | MODEL SELECTION | | | | | | |
| X4 | AUX. RELAY (FAN MOTOR) | | TH22 | | PIPE TEMPERATURE DETECTION/LIQUID (32°F/15kΩ,77°F/5.4kΩ) | | | |
| ZNR | VARISTOR | | | | | | | |




<fig:※1>

| Model | SW2 | SW3 | SW4 |
|---|---|---|---|
| PKFY-12NGMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 | ON OFF 1 2 3 4 5 |

Notes:

1. At servicing for outdoor unit,always follow the wiring diagram of outdoor unit.
2. In case of using MA-Remote controller, please connect to TB15.
   (Remote controller wire is non-polar.)
3. In case of using M-NET, please connect to TB5.
   (Transmisson line is non-polar.)
4. Symbol[S] of TB5 is the shield wire connection.
5. Symbols used in wiring diagram above are, ◎:terminal block, □□□:connecter.
6. The setting of the SW2/SW3/SW4 dip switches differs in the capacity for the detail, refer to the fig:※1.
7. Please set the switch SW5 according to the power supply voltage.
   Set SW5 to 230V side when the power supply is 230 volts.
   When the power supply is 208 volts, set SW5 to 208V side.

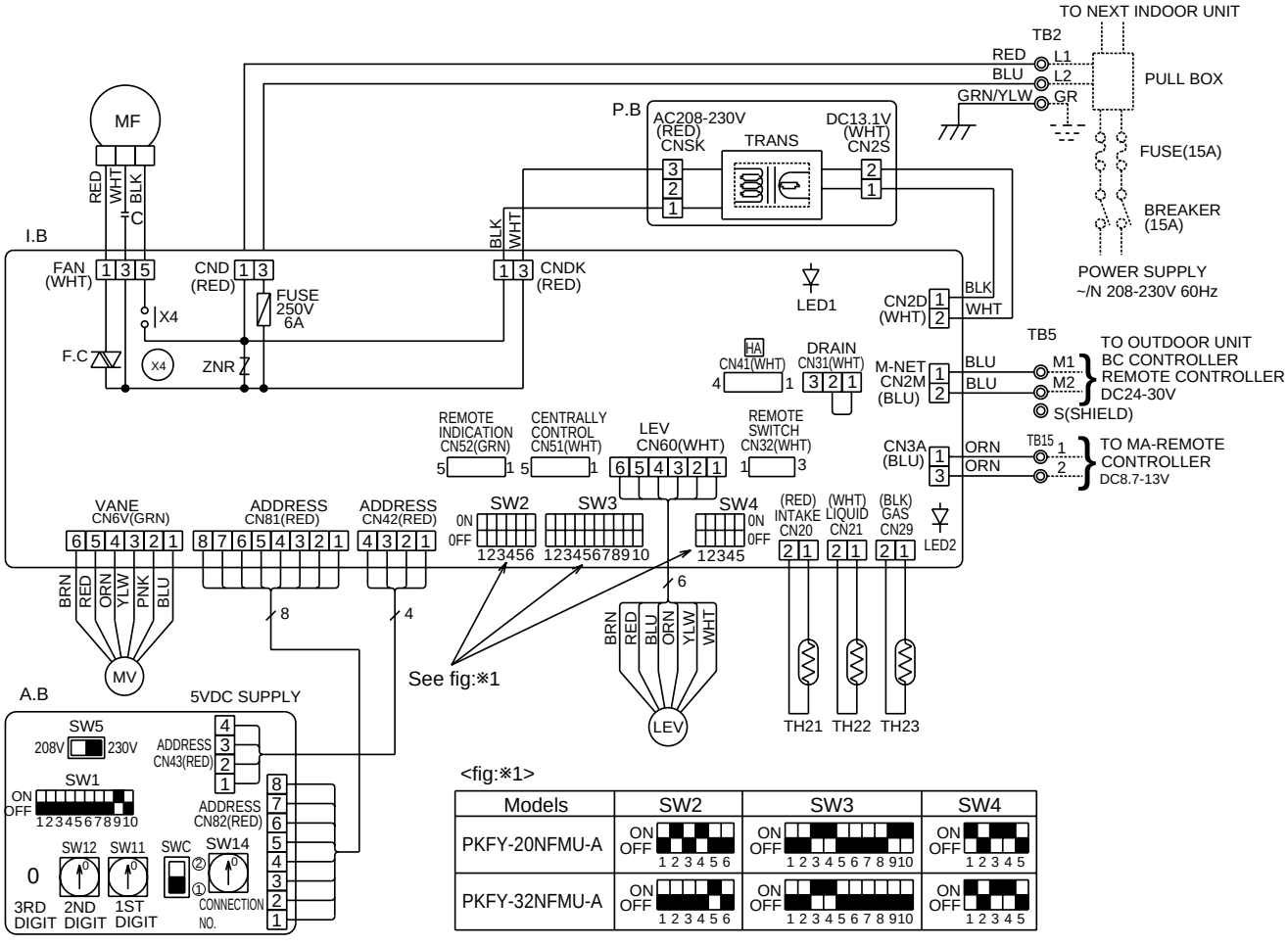
LED on indoor board for service

| Mark | Meaning | Function |
|---|---|---|
| LED1 | Main power supply | Main power supply(Indoor unit:208-230V) power on →lamp is lit |
| LED2 | Power supply for MA-Remote controller | Power supply for MA-Remote controller on →lamp is lit |

## PKFY-20NFMU-A PKFY-32NFMU-A

[LEGEND]

| SYMBOL | NAME | | SYMBOL | NAME | | SYMBOL | NAME | |
|---|---|---|---|---|---|---|---|---|
| I.B | INDOOR CONTROLLER BOARD | | C | CAPACITOR (FAN MOTOR) | | TH23 | THERMISTOR | PIPE TEMPERATURE DETECTION/GAS (32°F/15kΩ,77°F/5.4kΩ) |
| CN32 | CONNECTOR | REMOTE SWITCH | LEV | LINEAR EXPANSION VALVE | | | | |
| CN41 | | HA TERMINAL-A | MF | FAN MOTOR(WITH INNER THERMOSTAT) | | A.B | CIRCUIT BOARD (ADDRESS) | |
| CN51 | | CENTRALLY CONTROL | MV | VANE MOTOR | | SW1 | SWITCH | MODE SELECTION |
| CN52 | | REMOTE INDICATION | P.B | INDOOR POWER BOARD | | SW5 | | VOLTAGE SELECTION |
| F.C | FAN PHASE CONTROL | | TB2 | TERMINAL BLOCK | POWER SUPPLY | SW11 | | ADDRESS SETTING 1ST DIGIT |
| FUSE | FUSE (6A/250V) | | TB5 | | TRANSMISSION | SW12 | | ADDRESS SETTING 2ND DIGIT |
| SW2 | SWITCH | CAPACITY CODE | TB15 | | MA-REMOTE CONTROLLER | SW14 | | CONNECTION No. |
| SW3 | | MODE SELECTION | TH21 | THERMISTOR | ROOM TEMPERATURE DETECTION (32°F/15kΩ,77°F/5.4kΩ) | SWC | | OPTION SELECTOR |
| SW4 | | MODEL SELECTION | | | | | | |
| X4 | AUX. RELAY (FAN MOTOR) | | TH22 | | PIPE TEMPERATURE DETECTION/LIQUID (32°F/15kΩ,77°F/5.4kΩ) | | | |
| ZNR | VARISTOR | | | | | | | |




<fig:※1>

| Models | SW2 | SW3 | SW4 |
|---|---|---|---|
| PKFY-20NFMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 | ON OFF 1 2 3 4 5 |
| PKFY-32NFMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 | ON OFF 1 2 3 4 5 |

Notes:

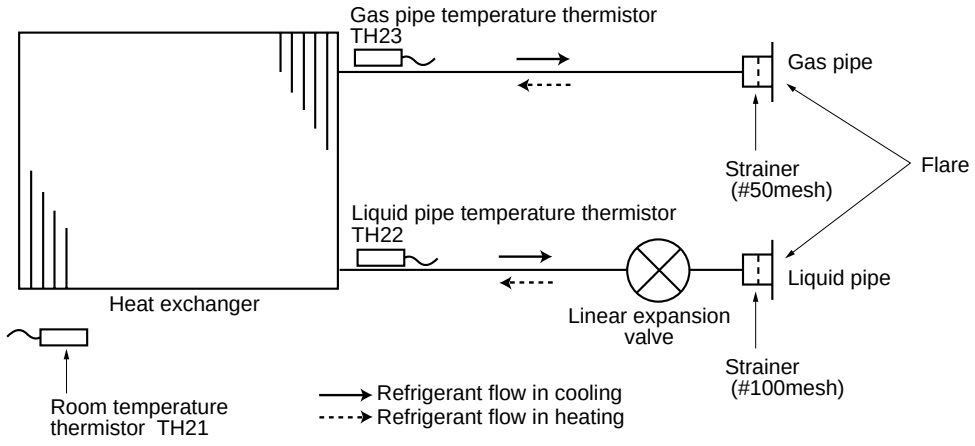
1. At servicing for outdoor unit,always follow the wiring diagram of outdoor unit.
2. In case of using MA-Remote controller, please connect to TB15.
   (Remote controller wire is non-polar.)
3. In case of using M-NET, please connect to TB5.
   (Transmisson line is non-polar.)
4. Symbol[S] of TB5 is the shield wire connection.
5. Symbols used in wiring diagram above are, ◎:terminal block, □□□ :connecter.
6. The setting of the SW2 / SW3 / SW4 dip switches differs in the capacity for the detail,refer to the fig:※1.
7. Please set the switch SW5 according to the power supply voltage.
   Set SW5 to 230V side when the power supply is 230 volts.
   When the power supply is 208 volts,set SW5 to 208V side.

LED on indoor board for service

| Mark | Meaning | Function |
|---|---|---|
| LED1 | Main power supply | Main power supply(Indoor unit:208-230V) power on ⟶lamp is lit |
| LED2 | Power supply for MA-Remote controller | Power supply for MA-Remote controller on ⟶lamp is lit |

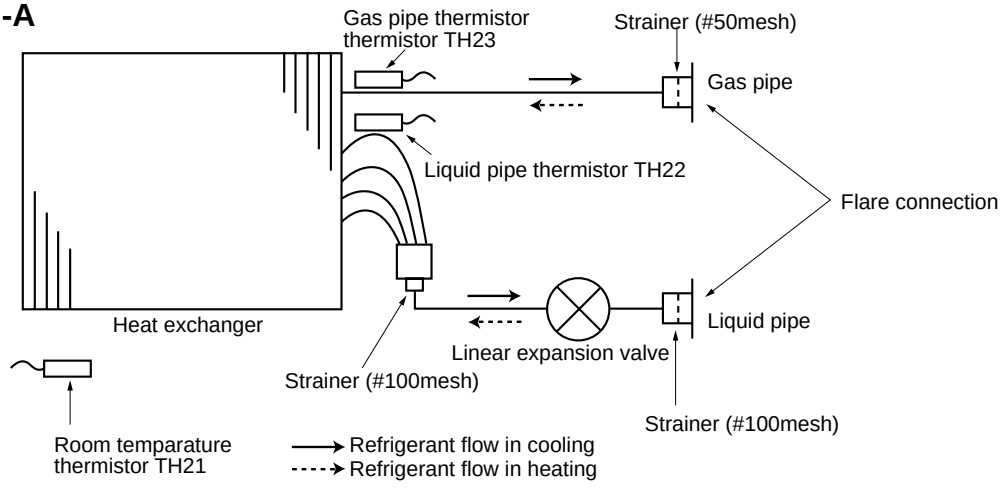
# 7 REFRIGERANT SYSTEM DIAGRAM

## PKFY-08NAMU-A




| Item \ Service Ref. | PKFY-08NAMU-A |
|---|---|
| Gas pipe | 1/2" |
| Liquid pipe | 1/4" |

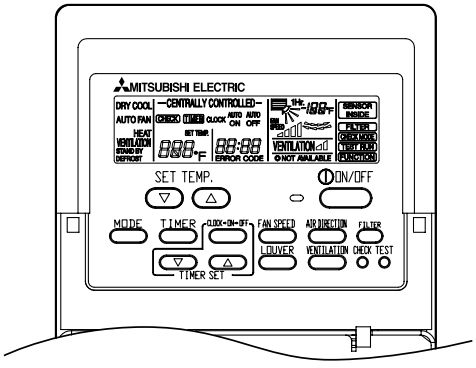
## PKFY-12NGMU-A
## PKFY-20NFMU-A
## PKFY-32NFMU-A




| Item \ Service Ref. | PKFY-12NGMU-A | PKFY-20NFMU-A<br>PKFY-32NFMU-A |
|---|---|---|
| Gas pipe | 1/2" | 5/8" |
| Liquid pipe | 1/4" | 3/8" |

# 8 MICROPROCESSOR CONTROL

## INDOOR UNIT CONTROL
## 8-1. COOL operation



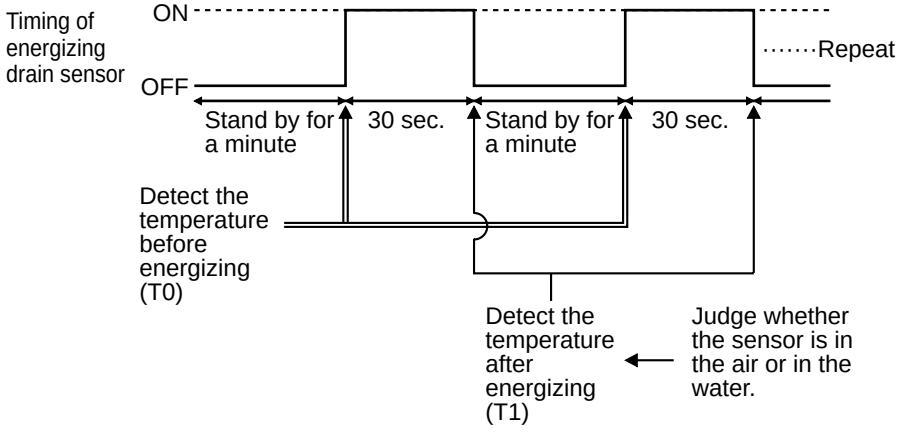
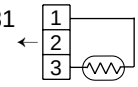
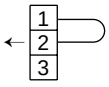

**<How to operate>**
① Press POWER ON/OFF button.
② Press the operation MODE button to display COOL.
③ Press the SET TEMP. button to set the desired temperature.
**NOTE**: The set temperature changes 2°F when the ▽ or △ button is pressed one time Cooling 67 to 87°F.

| Control modes | Control details | Remarks |
|---|---|---|
| 1. Thermoregulating function | 1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)<br>• Room temperature ≧ desired temperature + 2°F ⋯Thermo ON<br>• Room temperature ≦ desired temperature ⋯Thermo OFF | |
| | 1-2. Anti-freezing control<br>Detected condition : When the liquid pipe temp. (TH22) is 36°F or less in 16 minutes from compressors start up, anti-freezing control starts and the thermo OFF.<br>Released condition : The timer which prevents reactivating is set for 3 minutes, and anti- freezing control is cancelled when any one of the following conditions is satisfied.<br>① Liquid pipe temp. (TH22) turn 50°F or above.<br>② The condition of the thermo OFF has become complete by thermoregulating, etc.<br>③ The operation modes became mode other than COOL.<br>④ The operation stopped. | |
| 2. Fan | By the remote controller setting (switch of 4 speeds or 2 speeds) | |

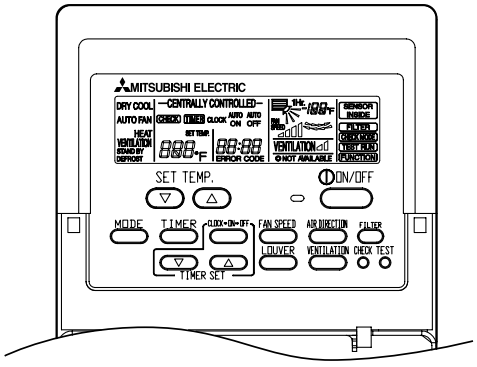
| Type | Fan speed notch |
|---|---|
| 4 speeds type | [Low], [Med2], [Med1], [High] |
| 2 speeds type | [Low], [High] |

**To be continued on the next page.**

**From the preceding page.**

| Control modes | Control details | Remarks |
|---|---|---|
| 3. Drain pump<br>**Except for PKFY-08NAMU-A.** | 3-1. Drain pump control<br>•Always drain pump ON during the COOL and DRY mode operation. (Regardless of the thermo ON/ OFF)<br>•When the operation mode has changed from the COOL or DRY to the others (including Stop), OFF the control after the drain pump ON for 3 minutes. | |
| | **Drain sensor function**<br>• Energize drain sensor at a fixed voltage for a fixed duration. After energizing, compare the drain sensor's temperature to the one before energizing, and judge whether the sensor is in the air or in the water.<br><br>**Basic control system**<br>• While drain pump is turned on, repeat the following control system and judge whether the sensor is in the air or in the water.<br>  <br>•Drain sensor temperature rise (Δt)<br>•Temperature of drain sensor before current is applied ($T_0$)<br>•Temperature of drain sensor after current is applied ($T_1$)<br><br>[ $\Delta t = T_1 - T_0$ ] | ※1 Drain sensor<br>Indoor control p.c. board<br>CN31<br>  <br>※2 If the unit is without the drain sensor, install the jumper connector.<br>Indoor control p.c. board<br>CN31<br>  <br>When installing the jumper connector, determine to detect compulsorily in the air. |
| 4. Vane<br>(up/ down vane change) | (1) Initial setting : Start at COOL mode and horizontal vane.<br>(2)Vane position : Horizontal →Downward A →Downward B →Downward C→Swing<br>PKFY-08NAMU-A is not equipped with the swing function.<br>: Horizontal →Downward A →Downward B →Downward C<br><br>(3) In case of PKFY-08NAMU-A and PKFY-12NGMU-A :<br>Restriction of the downward vane setting<br>When setting the downward vane A, B or C in [Med1], [Med2] or [Low] of the fan speed notch, the vane changes to horizontal position after 1 hour have passed.<br><br>In case of PKFY-20NFMU-A and PKFY-32NFMU-A :<br>Restriction of the downward vane setting<br>When setting the downward vane A, B or C in [Low] of the fan speed notch, the vane changes to horizontal position after 1 hour have passed. | ※1 "SET FOR 1 HOUR" appears on the wired remote controller. |

## 8-2. DRY operation

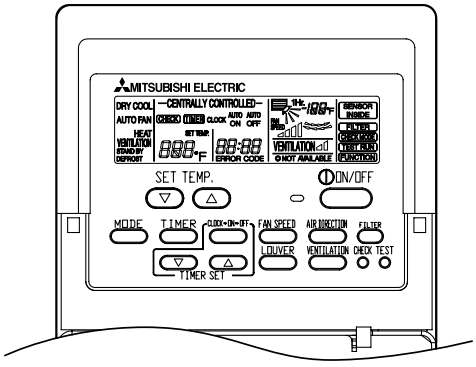



**<How to operate>**

① Press POWER ON/OFF button.
② Press the operation 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 ▽ or △ button is pressed one time. Dry 67 to 87°F.

<table>
<tr><th>Control modes</th><th>Control details</th><th>Remarks</th></tr>
<tr><td>1. Thermoregulating function</td><td>1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)<br>Setting the Dry thermo by the thermoregulating signal and the room temperature (TH1).<br>Dry thermo ON Room temperature ≧ desired temperature + 2°F<br>Dry thermo OFF Room temperature ≦ desired temperature
<table>
<tr><th rowspan="2">Room temperature</th><th colspan="2">3 min. passed since starting operation</th><th rowspan="2">Dry thermo ON time (min)</th><th rowspan="2">Dry thermo OFF time (min)</th></tr>
<tr><th>Thermoregulating signal</th><th>Room temperature (T1)</th></tr>
<tr><td rowspan="5">Over 64°F</td><td rowspan="4">ON</td><td>T1 ≧ 82°F</td><td>9</td><td>3</td></tr>
<tr><td>82°F > T1 ≧ 79°F</td><td>7</td><td>3</td></tr>
<tr><td>79°F > T1 ≧ 75°F</td><td>5</td><td>3</td></tr>
<tr><td>75°F > T1</td><td>3</td><td>3</td></tr>
<tr><td>OFF</td><td>Unconditional</td><td>3</td><td>10</td></tr>
<tr><td>Less than 64°F</td><td colspan="4">Dry thermo OFF</td></tr>
</table>
1-2. Frozen prevention control<br>No control function</td><td></td></tr>
<tr><td>2. Fan</td><td>Indoor fan operation controlled depends on the compressor conditions.
<table>
<tr><th>Dry thermo</th><th>Fan speed notch</th></tr>
<tr><td>ON</td><td>[Low]</td></tr>
<tr><td>OFF</td><td>Stop</td></tr>
</table>
Note: Remote controller setting is not acceptable.</td><td></td></tr>
<tr><td>3. Drain pump<br>Except for PKFY-08NAMU-A.</td><td>Same control as COOL operation</td><td></td></tr>
<tr><td>4. Vane<br>(up/ down vane change)</td><td>Same control as COOL operation</td><td></td></tr>
</table>

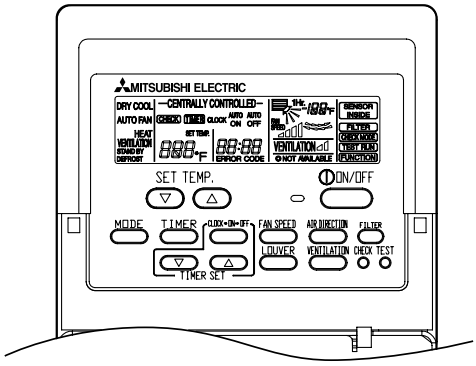
## 8-3. FAN operation




**<How to operate>**
① Press POWER ON/OFF button.
② Press the operation MODE button to display FAN.

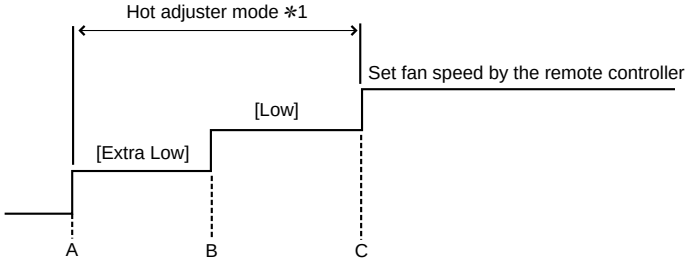
| Control modes | Control details | Remarks |
|---|---|---|
| 1. Fan | Set by remote controller.<br>Type: 4 speeds type — Fan speed notches: [Low], [Med2], [Med1], [High]<br>Type: 2 speeds type — Fan speed notches: [Low], [High] | |
| 2. Vane<br>(up/ down vane change) | Same as the control performed during the COOL operation, but with no restriction on the vane's downward blow setting. | |

## 8-4. HEAT operation




**<How to operate>**
① Press POWER ON/OFF button.
② Press the operation 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 ▽ or △ button is pressed one time. Heating 63 to 83°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 unit the heated air begins to blow.

| Control modes | Control details | Remarks |
|---|---|---|
| 1. Thermoregulating function | 1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)<br>•Room temp. ≦ desired temp.30°F ⋯Thermo ON<br>•Room temp. ≧ desired temp. ⋯Thermo OFF | |
| 2. Fan | Controlled by the remote controller (4-speed)<br>Give priority to under-mentioned controlled mode<br>2-1. Hot adjuster mode<br>2-2. Preheating exclusion mode<br>2-3. Thermo OFF mode (When the compressor off by the thermoregulating)<br>2-4. Cool air prevention mode (Defrosting mode)<br>2-5. Capacity increasing mode | ∗1<br>Fan speed change notch<br>Refer to the model function table |
| | 2-1. Hot adjuster mode<br>The fan controller becomes the hot adjuster mode for the following conditions.<br>① When starting the HEAT operation<br>② When starting the compressor by the thermoregulating<br>③ When release the HEAT defrosting operation<br>  <br>A: HOT adjuster mode start<br>B: 5 min have passed since the condition A or the indoor Condenser/ Evaporator temp. turned 65°F or more<br>C: 2 min have passed since the condition A (Terminating the hot adjuster mode) | ∗1 "STAND BY" will be displayed during the hot adjuster mode. |

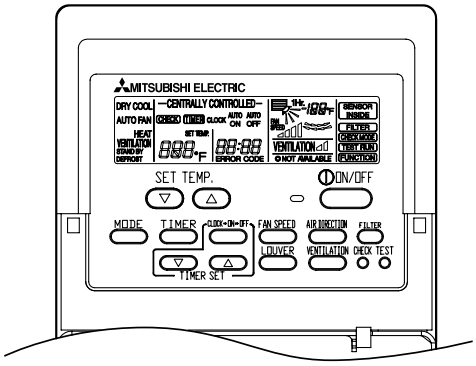


**To be continued on the next page.**

**From the preceding page.**

| Control modes | Control details | Remarks |
|---|---|---|
| 2. Fan | 2-2. Preheating exclusion mode<br>When the condition changes the auxiliary heater ON to OFF (thermoregulating or operation stop, etc), the indoor fan operates in [Low] mode for 1 minute. | ✻1 This control is same for the model without auxiliary heater. |
| | 2-3. Thermo OFF mode<br>When the thermoregulating function changes to OFF, the indoor fan operates in [Extra low]. | |
| | 2-4. Heat defrosting mode<br>The indoor fan stops. | |
| 3. Vane control (Up/ down vane change) | (1) Initial setting : OFF → HEAT⋯[last setting]<br>When changing the mode from exception of HEAT to HEAT operation. ⋯[Downward C]<br><br>(2) Vane position :<br>Horizontal →Downward A →Downward B →Downward C→Swing<br>PKFY-08NAMU-A is not equipped with the swing function.<br>Horizontal →Downward A →Downward B →Downward C<br><br>(3) Restriction of vane position<br>① The vane is horizontally fixed for the following modes.<br>(The control by the remote controller is temporally invalidated and control by the unit.)<br>•Thermo OFF<br>•Hot adjuster [Extra low] mode<br>•Heat defrost mode | |

## 8-5. AUTO operation [Automatic COOL/HEAT change over operation]

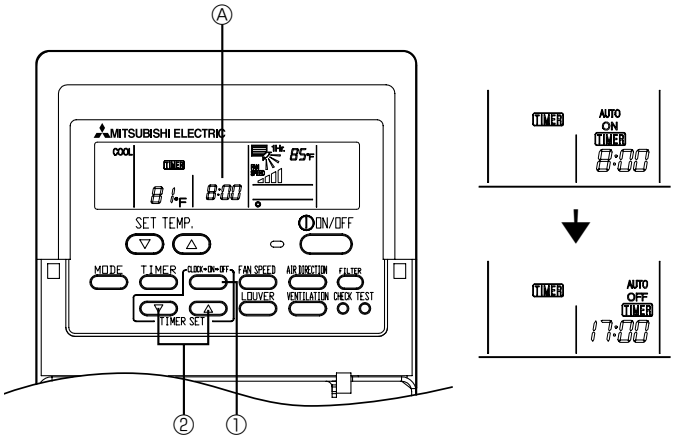


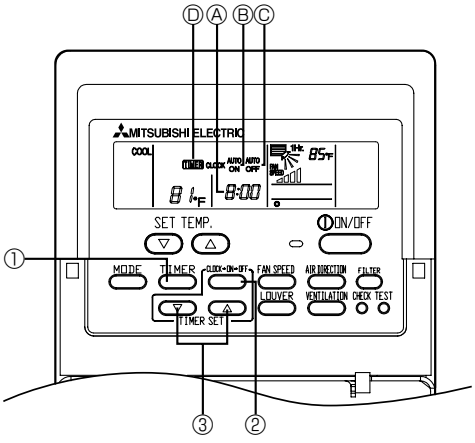

**<How to operate>**

① Press POWER ON/OFF button.
② Press the operation 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 ▽ or △ button is pressed one time. Automatic 67 to 83°F.
"AUTO" works to change by itself the operation mode either to cooling or heating to the room temperature.

| Control modes | Control details | Remarks |
|---|---|---|
| 1. Initial value of operation mode | HEAT mode for room temperature < Desired temperature<br>COOL mode for room temperature ≧ Desired temperature | |
| 2. Mode change | (1) HEAT mode → COOL mode<br>Room temperature ≧ Desired temperature + 4°F. or 15 min. has passed<br>(2) COOL mode → HEAT mode<br>Room temperature ≦ Desired temperature - 4°F. or 15 min. has passed | |
| 3. COOL mode | Same control as cool operation | |
| 4. HEAT mode | Same control as heat operation | |

## 8-6. TIMER operation




### 1) Set the current time

① Press CLOCK-ON-OFF button to display the “current time” Ⓐ.

| | |
|---|---|
| Remote controller display Ⓐ | CLOCK ("current time") → TIMER ("timer start time") → TIMER ("timer end time") → No display |

② Each time you press ▽ button, the time increases in increments of one minute. Each time you press △ button, the time decreases in increments of one minute.

- Press and hold the button to rapidly change the time.
- The time changes in increments of one minute ➔ ten minutes ➔ in units of hour; in this order.
- Approximately ten seconds after pressing the button, the display on the remote controller will turn off.

The example shows a timer set for operation start at 8:00 and end at 17:00.

### 2) set the mode to continuous as follows

① Press TIMER button to display TIMER Ⓓ.

### 3) Set the time to start the unit as follows

② Press CLOCK-ON-OFF button to display Ⓑ ON.

③ Press ▽ △ (TIMER SET) button to set the time that you want the unit to start. The start time is displayed at Ⓐ.

### 4) Set the time to stop the unit as follows

② Press CLOCK-ON-OFF button to display Ⓒ OFF.

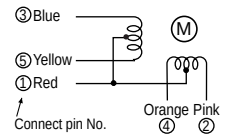
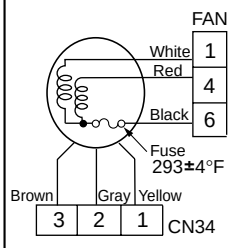
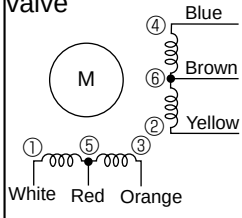
③ Press ▽ △ (TIMER SET) button to set the time that you want the unit to stop. The stop time is displayed at Ⓐ.

### 5) Set the mode to timer as follows

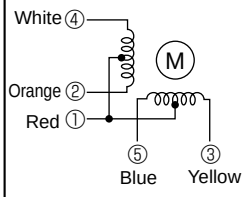
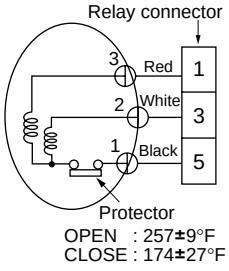
① Press TIMER button to display TIMER Ⓓ.

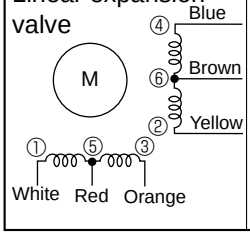
# 9 TROUBLESHOOTING

## 9-1. How to check
## PKFY-08NAMU-A

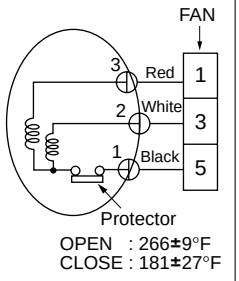
<table>
<tr><th>Part Name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor(TH21)<br>Liquid pipe temperature thermistor(TH22)<br>Gas pipe temperature thermistor(TH23)</td><td>Disconnect the connector, then measure the resistance using a tester.<br>(Surrounding temperature 50˚F~86˚F)<br><table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table><br>(Refer to page OC292-36 for details.)</td></tr>
<tr><td>Vane motor<br> 
</td><td>①Measure the resistance between the terminals using a tester.(Surrounding temperature 77˚F.)<br><table><tr><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><td>①-②<br>Red-Pink</td><td>①-③<br>Red-Blue</td><td>①-④<br>Red-Orange</td><td>①-⑤<br>Red-Yellow</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">400Ω ± 7%</td></tr></table></td></tr>
<tr><td>Fan motor<br> 
</td><td>①Measure the resistance between the terminals using a tester.(Surrounding temperature 68˚F.)<br><table><tr><th></th><th>Normal</th><th>Abnormal</th></tr><tr><td>White-Black</td><td>195Ω</td><td rowspan="2">Open or short</td></tr><tr><td>Red-Black</td><td>200Ω</td></tr></table><br>②Without disassembling the parts, measure the electrical pressure of the gray wire(Signal line) and brown wire (GND) while the power is on.<br><table><tr><td>Normal</td><td>⑴At first, check if the electrical pressure is 12V between the brown wire(GND) and yellow wire(VCC).<br>⑵Slowly start running the fan. It is normal if while the fan rotate once, the electrical pressure change from 0V to12V then go back to 0V.</td></tr><tr><td>Abnormal</td><td>If the electrical pressure stay at around 0V or 10V, it means the fan motor has the defects.</td></tr></table></td></tr>
<tr><td>Linear expansion valve<br> 
</td><td>Disconnect the connector then measure the resistance valve using a tester.<br>(Coil temperature 68˚F)<br><table><tr><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><td>①-⑤<br>White-Red</td><td>②-⑥<br>Yellow-Brown</td><td>③-⑤<br>Orange-Red</td><td>④-⑥<br>Blue-Brown</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">150Ω ±10%</td></tr></table><br>(Refer to page OC292-36 for details.)</td></tr>
</table>

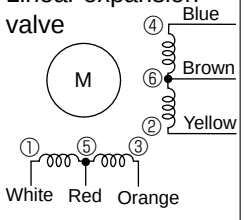
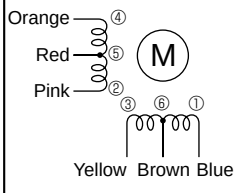
## PKFY-12NGMU-A

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH21)<br>Liquid pipe thermistor thermistor (TH22)<br>Gas pipe thermistor thermistor (TH23)</td><td>Disconnect the connector then measure the resistance using a tester.<br>(Surrounding temperature 50°F~86°F)<br><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 page OC292-36 for details.)</td></tr>
<tr><td>Vane motor<br> 
</td><td>Measure the resistance between the terminals using a tester.<br>(Surrounding temperature 68°F~86°F)<br><table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Red — Yellow</td><td rowspan="4">186Ω~214Ω</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<br> 

OPEN : 257±9°F<br>CLOSE : 174±27°F</td><td>Measure the resistance between the terminals using a tester.<br>(Surrounding temperature 68°F)<br><table><tr><th>Motor terminal<br>or<br>Relay connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Red-Black</td><td>141.2Ω</td><td rowspan="2">Open or short</td></tr><tr><td>White-Black</td><td>131.5Ω</td></tr></table></td></tr>
<tr><td>Linear expansion valve<br> 
</td><td>Disconnect the connector then measure the resistance with the tester.<br>(Surrounding temperature 68°F)<br><table><tr><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><td>① - ⑤<br>White-Red</td><td>② - ⑥<br>Yellow-Brown</td><td>③ - ⑤<br>Orange-Red</td><td>④ - ⑥<br>Blue-Brown</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">150Ω ±10%</td></tr></table>(Refer to page OC292-36 for details.)</td></tr>
</table>

**PKFY-20NFMU-A**
**PKFY-32NFMU-A**

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH21)<br>Liquid pipe temperature thermistor (TH22)<br>Gas pipe temperature thermistor (TH23)</td><td>Disconnect the connector then measure the resistance using a tester.<br>(Surrounding temperature 50°F~86°F)<br><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 page OC292-36 for details.)</td></tr>
<tr><td>Fan motor<br> 

OPEN : 266±9°F<br>CLOSE : 181±27°F</td><td>Measure the resistance between the terminals using a tester.<br>(Surrounding temperature 68°F)<br><table><tr><th rowspan="2">Motor terminal or Relay connector</th><th colspan="2">Normal</th><th rowspan="2">Abnormal</th></tr><tr><th>PKFY-20NFMU-A</th><th>PKFY-32NFMU-A</th></tr><tr><td>Red-Black</td><td>99.5Ω ±10%</td><td>62.6Ω ±10%</td><td rowspan="2">Open or short</td></tr><tr><td>White-Black</td><td>103.5Ω ±10%</td><td>74.0Ω ±10%</td></tr></table></td></tr>
<tr><td>Linear expansion valve<br> 
</td><td>Disconnect the connector then measure the resistance valve using a tester.<br>(Surrounding temperature 68°F)<br><table><tr><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><td>① - ⑤<br>White-Red</td><td>② - ⑥<br>Yellow-Brown</td><td>③ - ⑤<br>Orange-Red</td><td>④ - ⑥<br>Blue-Brown</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">150Ω ±10%</td></tr></table>(Refer to page OC292-36 for details.)</td></tr>
<tr><td>Vane motor<br> 
</td><td>Measure the resistance between the terminals using a tester.<br>(Surrounding temperature 68°F~86°F)<br><table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Brown — Yellow</td><td rowspan="4">186~214Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Brown — Blue</td></tr><tr><td>Red — Orange</td></tr><tr><td>Red — Pink</td></tr></table></td></tr>
</table>

<Thermistor characteristic graph>

Thermistor for lower temperature

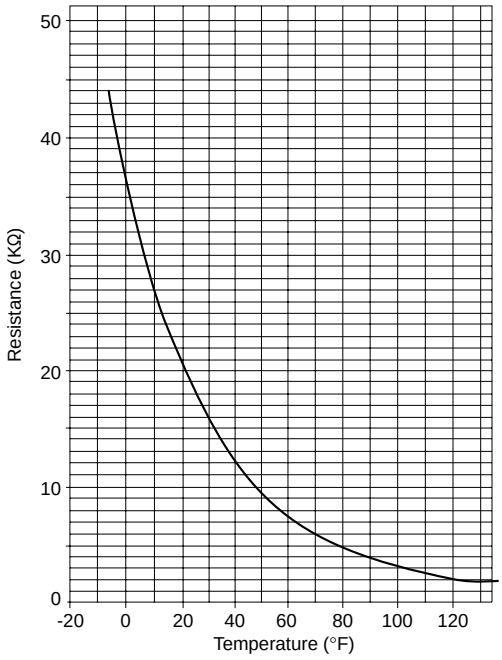
Room temperature thermistor(TH21)
Liquid pipe temperature thermistor(TH22)
Gas pipe temperature thermistor(TH23)

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

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

| | |
|---|---|
| 30°F | 15.8kΩ |
| 50°F | 9.6kΩ |
| 70°F | 6.0kΩ |
| 80°F | 4.8kΩ |
| 90°F | 3.9kΩ |
| 100°F | 3.2kΩ |

< Thermistor for lower temperature >

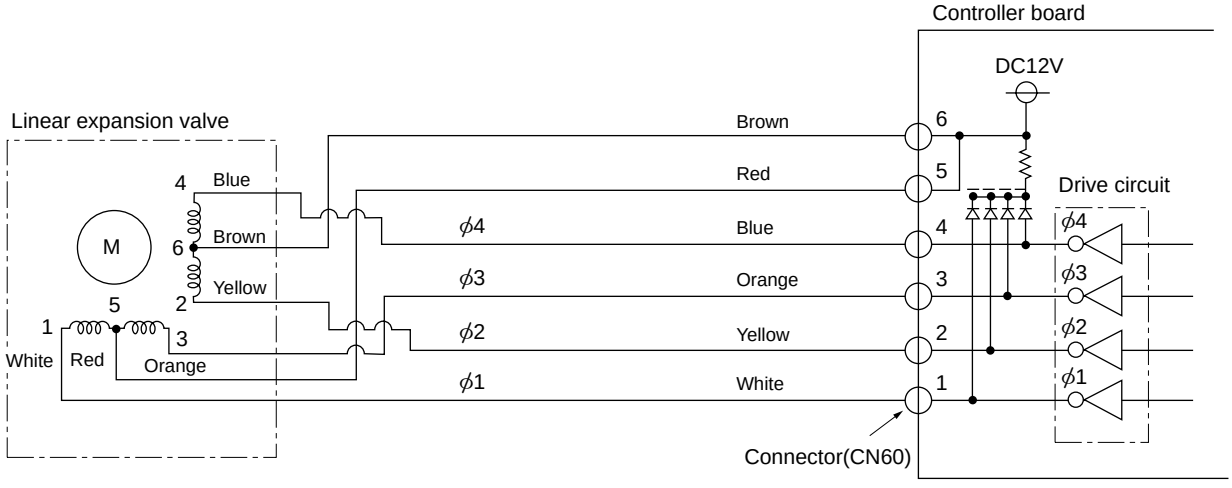



## Linear expansion valve

① **Operation summary of the linear expansion valve.**

• Linear expansion valve open/close through stepping motor after receiving the pulse signal from the indoor controller board.
• Valve position can be changed in proportion to the number of pulse signal.

<Connection between the indoor controller board and the linear expansion valve>




Note : Since the number of the connector at the controller board side and the relay connector are different, follow the color of the lead wire.

**<Output pulse signal and the valve operation>**

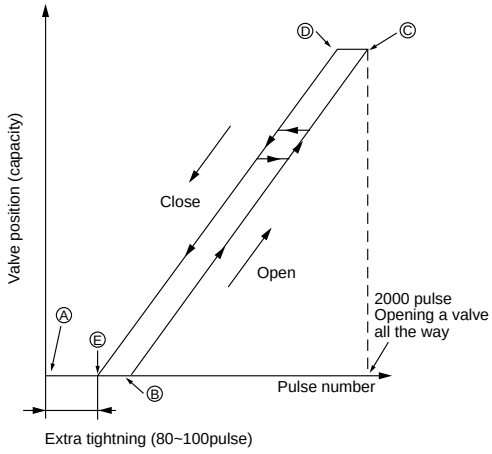
| Output (Phase) | Output | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| ϕ1 | ON | OFF | OFF | ON |
| ϕ2 | ON | ON | OFF | OFF |
| ϕ3 | OFF | ON | ON | OFF |
| ϕ4 | OFF | OFF | ON | ON |

Closing a valve : 1 → 2 → 3 → 4 → 1
Opening a valve : 4 → 3 → 2 → 1 → 4

The output pulse shifts in above order.

❋ 1. When linear expansion valve operation stops, all output phase become OFF.
2. At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will lock and vibrates.

② Linear expansion valve operation

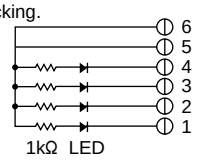
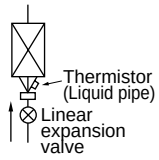



❋ When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to Ⓐ point in order to define the valve position.

When the valve moves smoothly, there is no noise or vibration occurring from the linear expansion valve : however, when the pulse number moves from Ⓔ to Ⓐ or when the valve is locked, more noise can be heard than normal situation.

❋ Noise can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

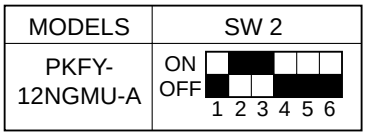
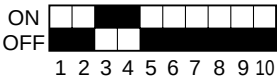
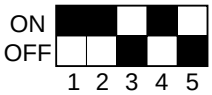
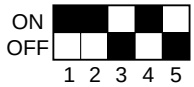
③ Trouble shooting

| Symptom | Check points | Countermeasures |
|---|---|---|
| Operation circuit failure of the micro processor. | Disconnect the connector on the controller board, then connect LED for checking.<br>  <br><br>Pulse signal will be sent out for 10 seconds as soon as the main switch is turn on. If there is LED with lights on or lights off, it means the operation circuit is abnormal. | Exchange the indoor controller board at drive circuit failure. |
| Linear expansion valve mechanism is locked. | Motor will idle and make ticking noise when motor is operated while the linear expansion valve is locked. This ticking sound is the sign of the abnormality. | Exchange the linear expansion vale. |
| Short or breakage of the motor coil of the linear expansion valve. | Measure the resistance between the each coil (red-white, red-orange, brown-yellow, brown-blue) using a tester. It is normal if the resistance is in the range of 150Ω ± 10%. | Exchange the linear expansion valve. |
| Valve doesn't close completely (thermistor leaking). | To check the linear expansion valve, operate the indoor unit in fan mode and at the same time operate other indoor units in cooling mode, then check the pipe temperature <liquid pipe temperature> of the indoor unit by the outdoor multi controller board operation monitor. During fan operation, linear expansion valve is closed completely and if there are some leaking, detecting temperature of the thermistor will go lower. If the detected temperature is much lower than the temperature indicated in the remote controller, it means the valve is not closed all the way. It is not necessary to exchange the linear expansion valve, if the leakage is small and not making any trouble.<br>  <br> | If large amount of thermistor is leaked, exchange the linear expansion valve. |
| Wrong connection of the connector or contact failure. | Check the color of lead wire and missing terminal of the connector. | Disconnect the connector at the controller board, then check the continuity. |

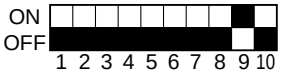
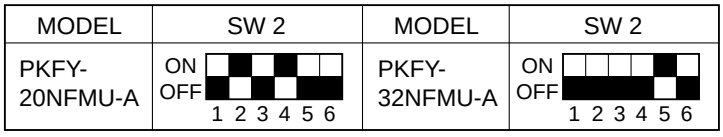
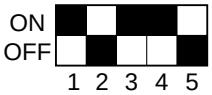
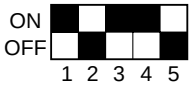
## 9-2. FUNCTION OF DIP SWITCH
## PKFY-08NAMU-A

| Switch | Pole | Function | Operation by switch | | Remarks |
|---|---|---|---|---|---|
| | | | ON | OFF | |
| SW1 Mode Selection | 1 | Thermistor <intake temperature detection> position | Built-in remote controller | Indoor unit | Address board<br><At delivery><br>ON / OFF<br>1 2 3 4 5 6 7 8 9 10<br>(Note 1) SW1-7=OFF, SW1-8=ON →Setting air flow. SW1-7=OFF, SW1-8=ON →Indoor fan stop.<br>(Note 2) It is impossible to intake the fresh air. |
| | 2 | Filter clogging detection | Provided | Not provided | |
| | 3 | Filter sign indication | 2,500hr | 100hr | |
| | 4 | Air intake (Note 2) | Not effective | Not effective | |
| | 5 | Remote indication switching | Thermostat ON signal indication | Fan output indication | |
| | 6 | Humidifier control | Fan operation at Heating mode | Heat thermostat ON is operating | |
| | 7 | Air flow set in case of Heat thermostat OFF | Low (Note 1) | Extra low (Note 1) | |
| | 8 | | Setting air flow (Note 1) | Reset to SW1-7 | |
| | 9 | Auto restart function | Effective | Not effective | |
| | 10 | Power ON/OFF | Effective | Not effective | |
| SW2 Capacity code setting | 1~4 | MODELS: PKFY-08NAMU-A; SW 2: ON / OFF, 1 2 3 4 | | | Indoor controller board<br>Set while the unit is off.<br><At delivery><br>Set for each capacity. |
| SW3 Function Selection | 1 | Heat pump / Cooling only | Cooling only | Heat pump | Indoor controller board<br>Set while the unit is off.<br><At delivery><br>ON / OFF<br>1 2 3 4 5 6 7 8 9 10<br>(Note 3) At cooling mode, each angle can be used only1 hour. |
| | 2 | Capacity save | Available | Not available | |
| | 3 | Vane | Available | Not available | |
| | 4 | Reading change of LEV opening on reversion of after defrosting | Not available | Available | |
| | 5 | Vane horizontal angle | Second setting | First setting | |
| | 6 | Vane cooling limit angle setting (Note 3) | Horizontal angle | Down B, C | |
| | 7 | Indoor linear expansion valve opening | Effective | Not effective | |
| | 8 | Heat 4degrees up | Not effective | Effective | |
| | 9 | Target superheat setting temperature | 5 degrees | 2 degrees | |
| | 10 | Target sub cool setting temperature | 15 degrees | 10 degrees | |

## PKFY-12NGMU-A

<table>
<tr><th rowspan="2">Switch</th><th rowspan="2">Pole</th><th rowspan="2">Function</th><th colspan="2">Operation by switch</th><th rowspan="2">Remarks</th></tr>
<tr><th>ON</th><th>OFF</th></tr>
<tr><td rowspan="10">SW1<br>Mode<br>Selection</td><td>1</td><td>Thermistor <intake temperature detection> position</td><td>Built-in remote controller</td><td>Indoor unit</td><td rowspan="10">Address board<br><At delivery><br>  <br><br>Note :<br>※1 At Heating mode, fan operating.<br>※2 At Heating mode, operating heat thermostat ON.<br>※3 SW 1-7=OFF, SW 1-8=ON → Setting air flow.<br>SW 1-7=ON, SW 1-8=ON → Indoor fan stop.</td></tr>
<tr><td>2</td><td>Filter clogging detection</td><td>Provided</td><td>Not provided</td></tr>
<tr><td>3</td><td>Filter cleaning</td><td>2,500hr</td><td>100hr</td></tr>
<tr><td>4</td><td>Fresh air intake</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>5</td><td>Remote indication switching</td><td>Thermostat ON signal indication</td><td>Fan output indication</td></tr>
<tr><td>6</td><td>Humidifier control</td><td>Always operated while the heating mode ※1</td><td>Operated depends on the condition ※2</td></tr>
<tr><td>7</td><td rowspan="2">Air flow set in case of Heat thermostat OFF</td><td>Fix to Low ※3</td><td>Fix to Extra low ※3</td></tr>
<tr><td>8</td><td>Depends on setting remote controller ※3</td><td>Depends on SW1-7</td></tr>
<tr><td>9</td><td>Auto restart function</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>10</td><td>Power ON/OFF</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>SW2<br>Capacity code setting</td><td>1~6</td><td colspan="3">  <br></td><td>Indoor controller board<br>Set while the unit is off.<br><At delivery><br>Set for each capacity.</td></tr>
<tr><td rowspan="10">SW3<br>Function Selection</td><td>1</td><td>Heat pump / Cooling only</td><td>Cooling only</td><td>Heat pump</td><td rowspan="10">Indoor controller board<br>Set while the unit is off.<br><At delivery><br>  <br><br>Note :<br>※4 At cooling mode, each angle can be used only1 hour.</td></tr>
<tr><td>2</td><td>Louver</td><td>Available</td><td>Not available</td></tr>
<tr><td>3</td><td>Vane</td><td>Available</td><td>Not available</td></tr>
<tr><td>4</td><td>Vane swing function</td><td>Available</td><td>Not available</td></tr>
<tr><td>5</td><td>Vane horizontal angle</td><td>Second setting</td><td>First setting</td></tr>
<tr><td>6</td><td>Vane cooling limit angle setting ※4</td><td>Horizontal angle</td><td>Down B, C</td></tr>
<tr><td>7</td><td>Indoor linear expansion valve opening</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>8</td><td>Heat 4degrees up</td><td>Not effective</td><td>Effective</td></tr>
<tr><td>9</td><td>Superheat setting temperature</td><td>5 degrees</td><td>2 degrees</td></tr>
<tr><td>10</td><td>Sub cool setting temperature</td><td>15 degrees</td><td>10 degrees</td></tr>
<tr><td>SW4<br>Unit Selection</td><td>1~5</td><td colspan="3">  <br></td><td>Indoor controller board<br>Set while the unit is off.<br><At delivery><br>  <br></td></tr>
</table>

**PKFY-20NFMU-A**
**PKFY-32NFMU-A**

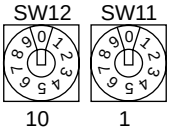
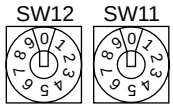
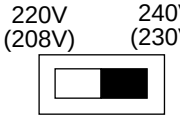
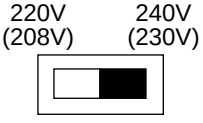
| Switch | Pole | Function | Operation by switch | | Remarks |
|---|---|---|---|---|---|
| | | | ON | OFF | |
| SW1 Mode Selection | 1 | Thermistor <intake temperature detection> position | Built-in remote controller | Indoor unit | Address board<br><At delivery><br>  <br> |
| | 2 | Filter clogging detection | Provided | Not provided | |
| | 3 | Filter cleaning | 2,500hr | 100hr | |
| | 4 | Fresh air intake | Effective | Not effective | |
| | 5 | Remote indication switching | Thermostat ON signal indication | Fan output indication | |
| | 6 | Humidifier control | Always operated while the heating mode ※1 | Operated depends on the condition ※2 | |
| | 7 | Air flow set in case of Heat thermostat OFF | Fix to Low ※3 | Fix to Extra low ※3 | |
| | 8 | | Depends on setting remote controller ※3 | Depends on SW1-7 | |
| | 9 | Auto restart function | Effective | Not effective | |
| | 10 | Power ON/OFF | Effective | Not effective | |
| SW2 Capacity code setting | 1~6 |  <br> | | | Indoor controller board<br>Set while the unit is off.<br><At delivery><br>Set for each capacity. |
| SW3 Function Selection | 1 | Heat pump / Cooling only | Cooling only | Heat pump | Indoor controller board<br>Set while the unit is off.<br><At delivery><br>  <br> |
| | 2 | Louver | Available | Not available | |
| | 3 | Vane | Available | Not available | |
| | 4 | Vane swing function | Available | Not available | |
| | 5 | Vane horizontal angle | Second setting | First setting | |
| | 6 | Vane cooling limit angle setting ※4 | Horizontal angle | Down B, C | |
| | 7 | Indoor linear expansion valve opening | Effective | Not effective | |
| | 8 | Heat 4degrees up | Not effective | Effective | |
| | 9 | Superheat setting temperature | 5 degrees | 2 degrees | |
| | 10 | Sub cool setting temperature | 15 degrees | 10 degrees | |
| SW4 Unit Selection | 1~5 |  <br> | | | Indoor controller board<br>Set while the unit is off.<br><At delivery><br>  <br> |

Note :
※1 At Heating mode, fan operating.
※2 At Heating mode, operating heat thermostat ON.
※3 SW 1-7=OFF, SW 1-8=ON → Setting air flow.
SW 1-7=ON, SW 1-8=ON → Indoor fan stop.

Note :
※4 At cooling mode, each angle can be used only1 hour.

※5 SW 3-9, 3-10 setting
PKFY-20NFMU-A = ON
PKFY-32NFMU-A = OFF

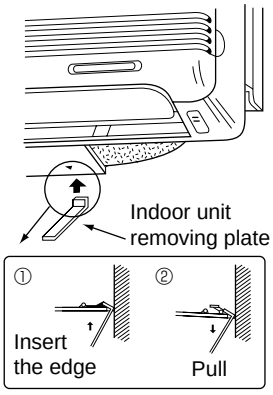
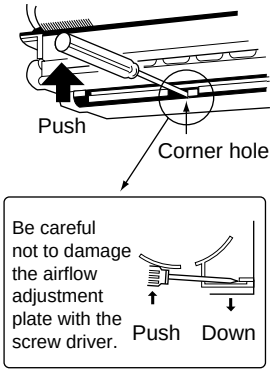
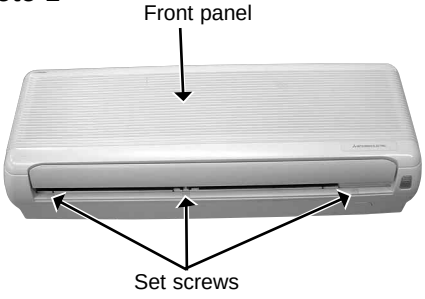
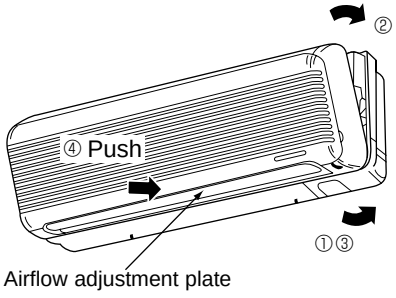
**PKFY-08NAMU-A**
**PKFY-12NGMU-A**
**PKFY-20NFMU-A**
**PKFY-32NFMU-A**

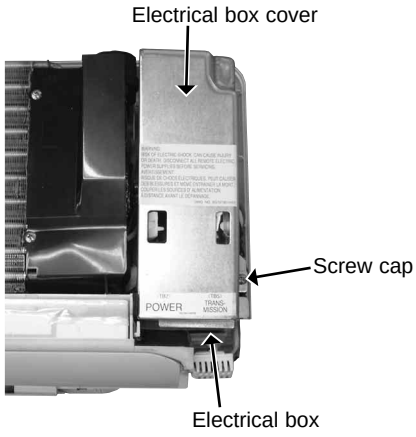
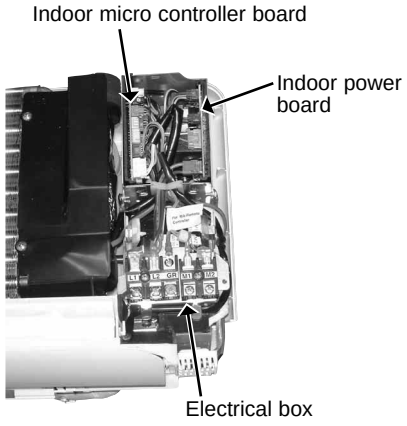
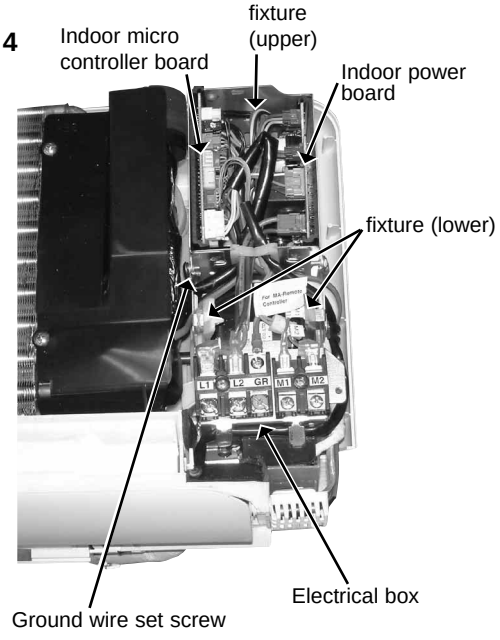
| Switch | Pole | Operation by switch | Remarks |
|---|---|---|---|
| SW11<br>1st digit address setting<br><br>SW12<br>2nd digit address setting | Rotary switch |  <br>Address setting should be done when M-NET Remote controller is being used. | Address board<br>Address can be set while the unit is stopped.<br><At delivery><br>  |
| SW14<br>Connection No. setting | Rotary switch |  <br>This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set. | Address board<br><At delivery><br>  |
| SW5<br>Voltage Selection | 2 |  <br>If the unit is used at the 230V area, set the voltage to 230V.<br>If the unit is used at the 208V, set the voltage to 208V. | Address board<br><At delivery><br>  |

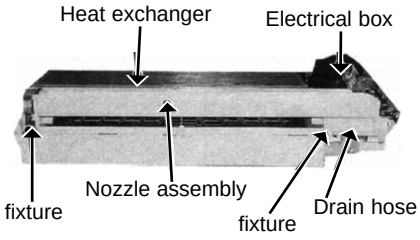
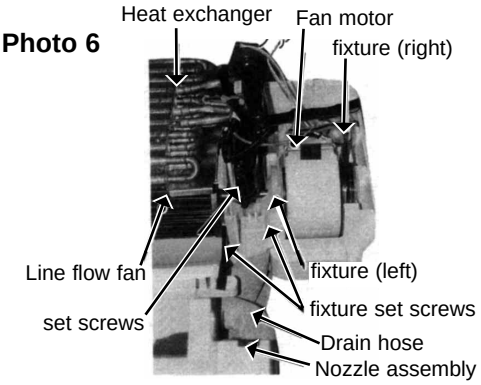
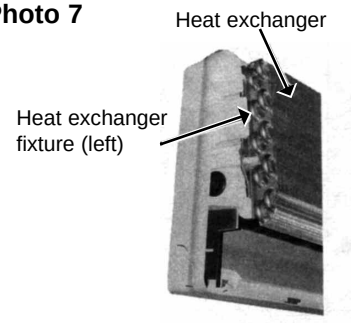
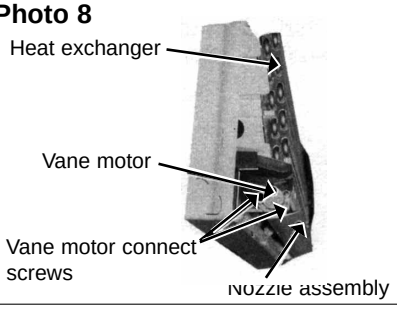
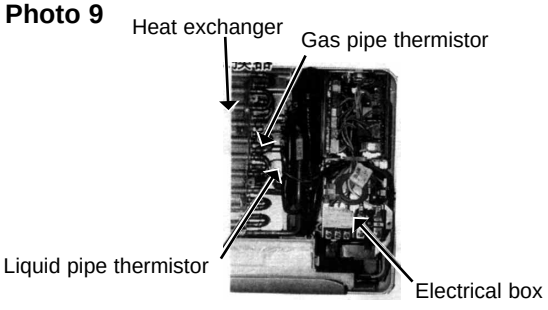
# 10 DISASSEMBLY PROCEDURE

**PKFY-08NAMU-A**

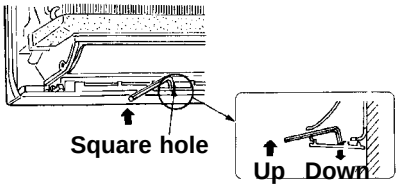
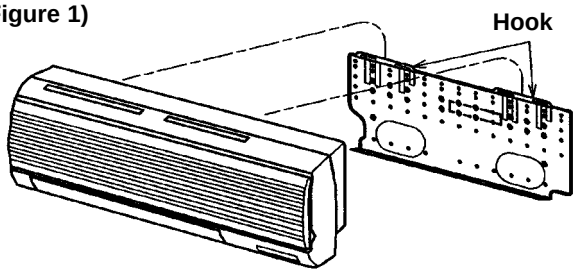
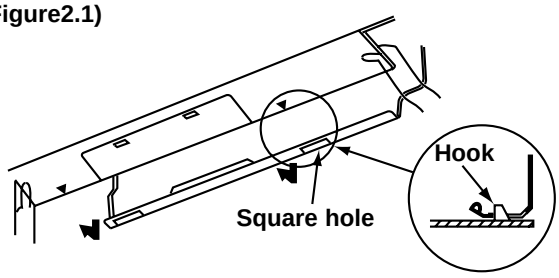
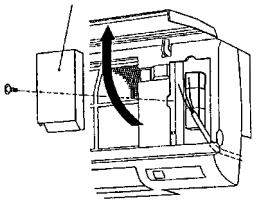
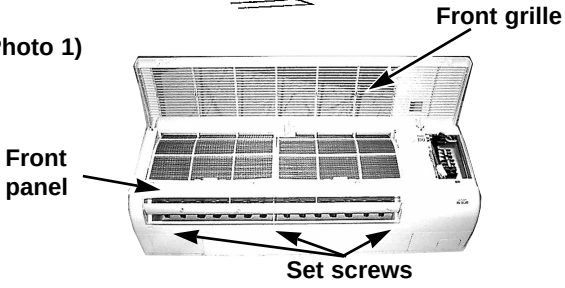
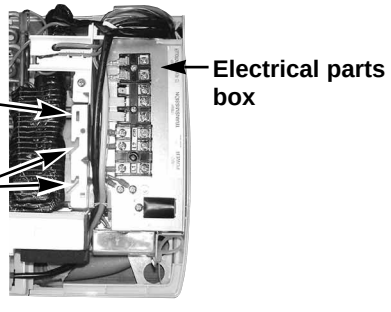
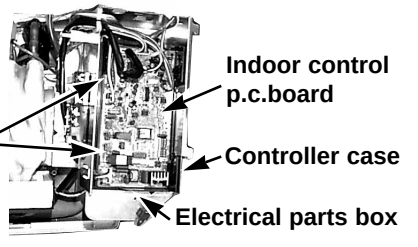
Be careful on removing heavy parts.

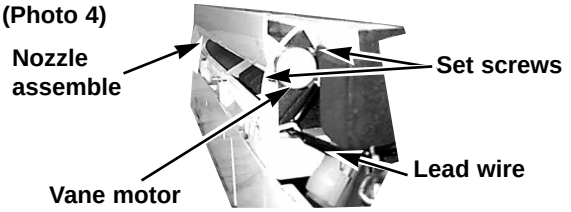
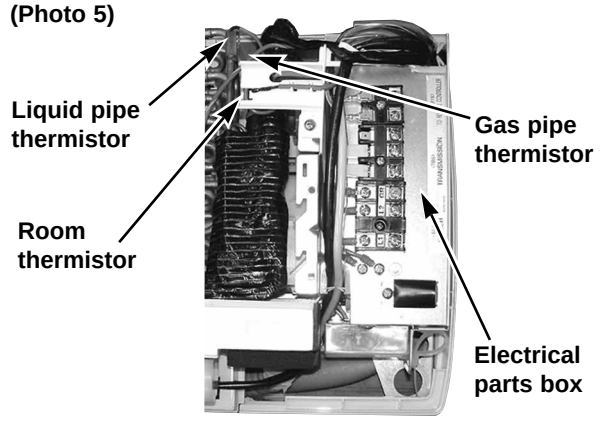
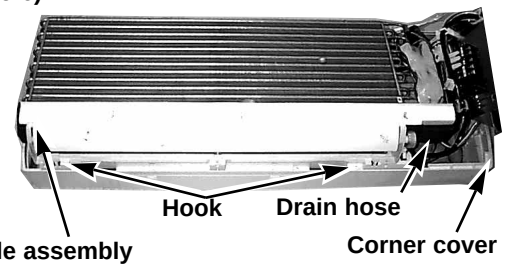
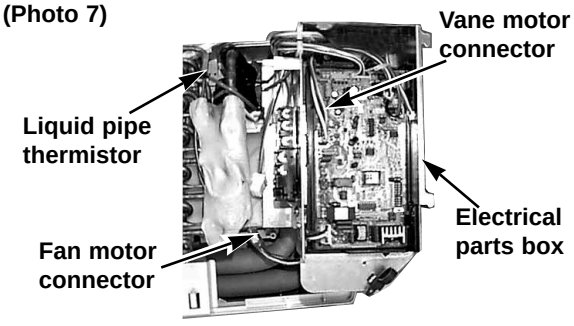
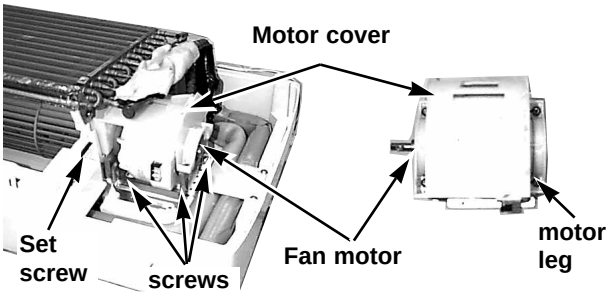
| OPERATING PROCEDURE | PHOTOS&ILLUSTRATIONS |
|---|---|
| **1. REMOVING THE LOWER SIDE OF THE INDOOR UNIT FROM THE INSTALLATION PLATE**<br><br>When there is removing plate<br>(1) Remove the corner box at right lower side of the indoor unit.<br>(2) Insert the removing plate at the back side of the corner box to remove the indoor unit.<br>(3) Remove the hook by pulling the lower side of the indoor unit down as shown in the figure **1**.<br><br>When there is no removing plate or it can not be used for some reason.<br>(1) Remove the front panel.<br>(2) Insert the screw driver to the corner hole at both left and right side as shown in the figure **2**.<br>(3) Push it up then, pull down the lower side of indoor unit and remove the hook. | **Figure 1**<br>  <br><br>**Figure 2**<br>  <br> |
| **2. REMOVING THE FRONT PANEL**<br><br>❋ Before removing the front panel, leave the open space at upper side of air flow adjustment plate approximately 2 to 3 cm.<br>(1) Remove the screw caps then remove the set screws. (Refer to the photo **1**)<br>(2) Remove the left side of the front panel, then right side.<br>(3) After removing the lower side of the front panel a little, remove it as pulling the upper side toward you.<br>❋ Please pay attention to the nozzle assemble.<br><br>INSTALLING THE FRONT PANEL<br>(1) Insert the lower side of the front panel under the air adjustment plate.<br>(2) Set the upper side of the front panel.<br>(3) Set the lower side of the front panel then fix it with the screws.<br>(4) Press the area indicated as arrow sign and set it to the air conditioner unit. | **Photo 1**<br>  <br><br>**Figure 3**<br>  <br> |

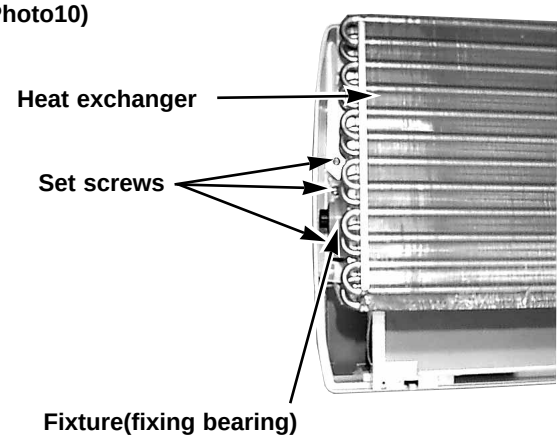
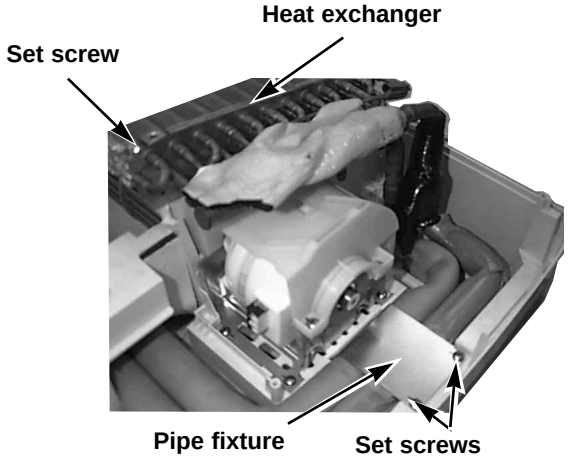
| OPERATING PROCEDURE | PHOTOS&ILLUSTRATIONS |
|---|---|
| **3. REMOVING THE INDOOR MICRO CONTROLLER BOARD AND INDOOR POWER BOARD**<br><br>(1) Remove the front panel. (Refer to **2**)<br>(2) Remove the electrical box cover (screw 4 X 10). (Refer to the photo **2**)<br><br>INDOOR MICRO CONTROLLER BOARD<br>(1) Disconnect the following connectors on the indoor micro controller board.<br>(connector in front of)<br>● CN60, CN5V, CN34, CN29, CN21<br>● CN42, CN81, CN3A, CN20<br>(2) Pull out the indoor micro controller board toward you, then disconnect the rest of connectors.<br>● CN53M, CN35M (See the photo **3**)<br><br>INDOOR POWER BOARD<br>(1) Disconnect the following connectors on the indoor power board.<br>● FAN, CN53P, CN35P, CN2M, CND<br>(2) Remove the screws of the indoor power board, then pull out the indoor power board toward you. (See the photo **3**) | **Photo 2**<br>  <br><br>**Photo 3**<br>  <br> |
| **4. REMOVING THE ELECTRICAL BOX**<br><br>(1) Remove the front panel. (Refer to **2**)<br>(2) Remove the electrical box cover.<br>(3) Pull the nozzle assembly toward you as opening the catch of the nozzle assembly.<br>(4) Disconnect the indoor/outdoor connector.<br>(5) Disconnect the following connector on the indoor micro controller board. (See the photo **4**)<br>● CN60, CN5V, CN34, CN29, CN21, CN20, CN3A<br>(6) Disconnect the following connector on the indoor power board. (See the photo **4**)<br>● FAN, CN2M, CND<br>(7) Disconnect the ground wire.<br>(8) Pull the disconnected lead wire out from the electrical box.<br>(9) Push up the upper fixture catch to remove the box, then pull the lower fixture and remove it from the box fixture. | **Photo 4**<br>  <br> |

| OPERATING PROCEDURE | PHOTOS&ILLUSTRATIONS |
|---|---|
| **5. REMOVING THE NOZZLE ASSEMBLY**<br><br>(1) Remove the front panel (Refer to **2**).<br>(2) Remove the electrical box cover.<br>(3) Disconnect the connector (CN5V) on the indoor micro con troller board.<br>(4) After unhook the right side of the corner box, press the upper left side and remove the corner box.<br>(5) Remove the nozzle assemble from the fixture. (See the photo **5**)<br>(6) Remove the drain hose. | **Photo 5**<br>  <br> |
| **6. REMOVING THE LINE FLOW FAN AND THE FAN MOTOR**<br><br>(1) Remove the front panel. (Refer to **2**)<br>(2) Remove the nozzle assembly. (Refer to **5**)<br>(3) Remove the electrical parts box.<br>(4) Remove the fixture while pressing the right side of motor fixture catch. (See the photo **6**)<br>(5) Remove the left side of the motor fixture.<br>(6) Loosen the screw which fixes the line flow fan to the fan motor, then remove the fan motor by sliding it to the right side. (See the photo **6**)<br>(7) Pull the left-hand side of the heat exchanger toward you. (See the photo **7**)<br>(8) Remove the line flow fan. | **Photo 6**<br>  <br><br>**Photo 7**<br>  <br> |
| **7. REMOVING THE VANE MOTOR**<br><br>(1) Remove the front panel.<br>(2) Remove the screw of the electrical parts box cover, and remove the cover.<br>(3) Remove the screw of the vane motor, and remove the motor from the shaft.<br>(4) Disconnect the vane motor connector (CN5V) on the indoor controller board. | **Photo 8**<br>  <br> |
| **8. REMOVING THE LIQUID PIPE THERMISTOR AND GAS PIPE THERMISTOR**<br><br>(1) Remove the front panel. (Refer to **2**)<br>(2) Remove the electrical box cover.<br>(3) Remove the pipe cover.<br>(4) Cut the wiring fixed band.<br>(5) Remove the liquid pipe thermistor and gas pipe thermistor. (See the photo **9**)<br>(6) Disconnect the connector (CN29) (CN21) on the indoor micro controller board. | **Photo 9**<br>  <br> |

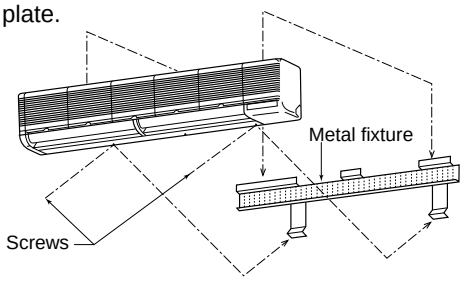
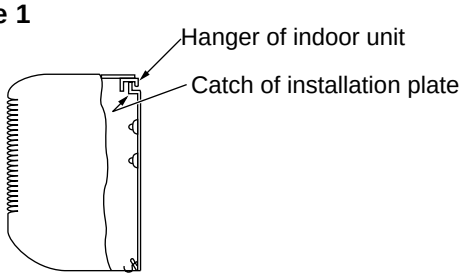
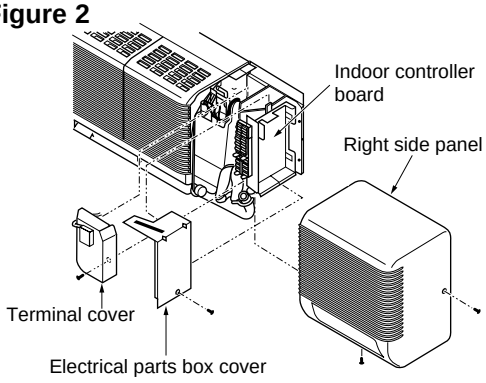
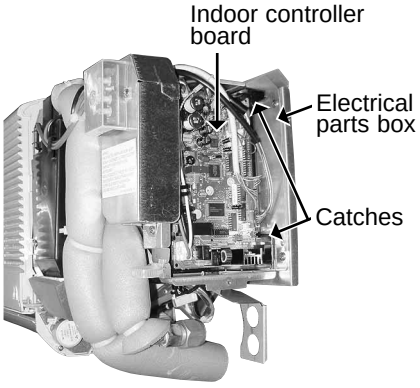
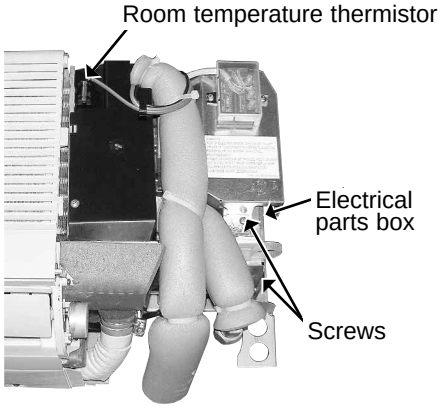
## PKFY-12NGMU-A

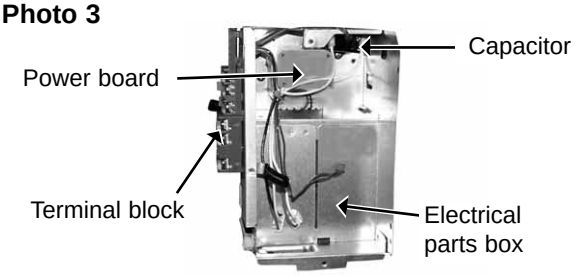
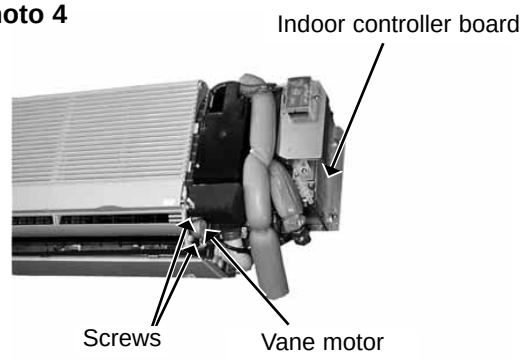
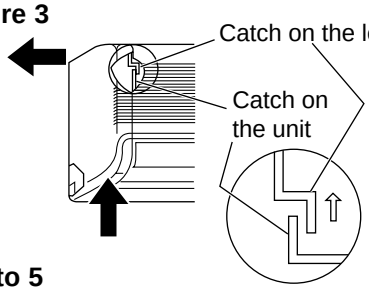
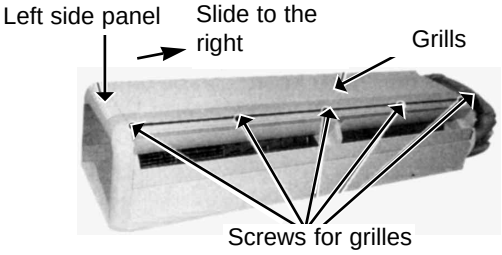
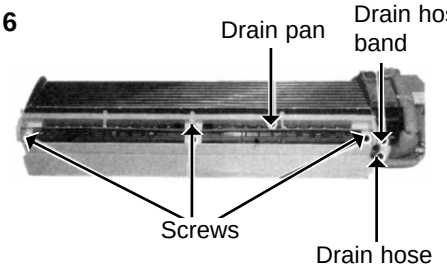
| OPERATION PROCEDURE | PHOTOS & ILLUSTRATION |
|---|---|
| **1. REMOVE THE LOWER SIDE OF THE INDOOR UNIT FROM THE INSTALLATION PLATE**<br>(1) Remove the left / right corner box of the indoor unit.<br>(2) Hold and pull down the lower and both ends of the indoor unit, and remove the ▼ section from the square hole. (Refer to the figure 2.1)<br>Or remove the front panel and push the ▼ section down by using allen wrench ,etc. from the front side. (Refer to the figure 2.2).<br>(3) Unhook the top of the indoor unit from the back plate catch.<br><br>**(Figure 2.2)**   | **(Figure 1)**  <br>**(Figure2.1)**   |
| **2. REMOVING THE FRONT PANEL**<br>(1) Open the front grille.<br>(2) Remove the terminal block cover with a screw.<br>(3) Remove the screw 3caps then remove the set 3screws.<br>(4) After removing the lower side of the front panel a little, remove it as pulling toward upper. | **(Figure 3)**  <br>**(Photo 1)**   |
| **3. REMOVING THE INDOOR CONTROLLER BOARD**<br>(1) Remove the terminal block cover.<br>(2) Remove the front panel. (see the photo 1)<br>(3) Remove the electrical parts box(2screws).<br>(4) Remove the electrical parts box cover(1screw).<br>(5) Disconnect the connector on the indoor controller board and remove the controller board by Pulling up the hook of the controller case.<br>※ To smooth work, hang the side hooks of the electrical parts box on the hook of the motor cover. (see the photo 3) | **(Photo 2)**  <br>**(Photo 3)**   |

| OPERATION PROCEDURE | PHOTOS & ILLUSTRATION |
|---|---|
| **4. REMOVING THE VANE MOTOR**<br>(1) Disconnect the connector CN6V on the indoor controller board.<br>(2) Remove the 2screws of the vane motor, disconnect the lead wire and remove the vane motor from the shaft. | (Photo 4)<br>  <br> |
| **5. REMOVING THE THERMISTOR**<br>(1) Removing the room thermistor TH21.<br>①Disconnect the connector CN20<red> on the indoor controller board.<br>②Remove the room thermistor from the holder.<br>(2) Removing the liquid pipe thermistor TH22.<br>①Disconnect the connector CN21<white> on indoor controller board.<br>②Remove the liquid pipe thermistor with set to the pipe.<br>(3) Removing the gas pipe thermistor TH23.<br>①Disconnect the connector CN29<black> on indoor controller board.<br>②Remove the gas pipe thermistor with set to the pipe. | (Photo 5)<br>  <br> |
| **6. REMOVING THE NOZZLE ASSEMBLE**<br>(1) Disconnect the connector CN6V on the indoor controller .board.<br>(2) Disconnect the lead wire of the vane motor.<br>(3) Remove the corner cover.<br>(4) Pull the drain hose out from the nozzle assembly.<br>(5) Unhook the hook of the lower nozzle assembly and pull the nozzle assembly toward you,then remove the nozzle assemble by sliding it down. | (Photo 6)<br>  <br> |
| **7. REMOVING THE ELECTRICAL PARTS BOX**<br>(1) Remove the terminal block cover.<br>(2) Remove the front panel.(see the photo 1)<br>(3) Disconnect the vane motor connector.<br>(4) Disconnect the fan motor connector from the fan motor.<br>(5) Remove the liquid / gas pipe thermistor.(see the photo 5)<br>(6) Disconnect the linear expansion valve connector.<br>(7) Remove the electrical parts box (2screws). | (Photo 7)<br>  <br> |
| **8. REMOVING THE FAN MOTOR**<br>(1) Remove the terminal block cover.<br>(2) Remove the front panel.(see the photo 1)<br>(3) Remove the electrical parts box.(see the photo 7)<br>(4) Remove the nozzle assembly.(see the photo 6)<br>(5) Remove the fan motor leg fixing 3screws.<br>(6) Unscrew the set screws using by allen wrench and remove it by sliding the fan motor to right.<br>(7) Remove the 4screws and remove the motor cover from the fan motor leg. | (Photo 8) (Photo 9)<br>  <br> |

| OPERATION PROCEDURE | PHOTOS & ILLUSTRATION |
|---|---|
| **9. REMOVING THE LINE FLOW FAN**<br>(1) Remove the terminal block cover.<br>(2) Remove the front panel.(see the photo 1)<br>(3) Remove the electrical parts box.(see the photo 7)<br>(4) Remove the nozzle assembly.(see the photo 6)<br>(5) Remove the fan motor.(see the photo 8)<br>(6) Remove the pipe fixture with 2screws.(see the photo11)<br>(7) Remove the left / right screws of the heat exchanger and pull the left-hand side up.<br>(8) Remove the 2screws by sliding it toward you remove the fixture(fixing bearing).<br>※ The fan motor is removable first , when the fan removing is hard.<br>※ When resetting the fan to the fan motor. Locate and fix the shaft after installing the fan. | **(Photo10)**<br>  <br> |
| **10. REMOVING THE HEAT EXCHANGER**<br>(1) Remove the terminal block cover.<br>(2) Remove the front panel.(see the photo 1)<br>(3) Remove the electrical parts box.(see the photo 7)<br>(4) Remove the corner box.<br>(5) Remove the nozzle assemble.(see the photo 6)<br>(6) Remove the 2screws and the pipe fixture.<br>(7) Remove the 2screws and heat exchanger. | **(Photo 11)**<br>  <br> |

## PKFY-32NFMU-A

| OPERATING PROCEDURE | PHOTOS & ILLUSTRATION |
|---|---|
| **1. Removing the lower side of the indoor unit from the installation plate**<br>(1) Remove the 2 screws.<br>Hang the indoor unit hangers to the catches on the installation plate.<br>  | **Figure 1**<br>  |
| **2. Removing the right side panel**<br>(1) Remove the 2 screws of the right side panel:one on the bottom and the other on the upper right-hand side.<br>(2) Sliding the right side panel to the right, pull it out toward you. | **Figure 2**<br>  |
| **3. Removing the indoor controller board**<br>(1) Remove the right side panel.<br>(2) Remove the screw of the electrical parts box cover, and remove the cover.<br>(3) Disconnect the connectors on the indoor controller board.<br>(4) To unhook the catches on the right-hand side of the indoor controller board, pull the left-hand side toward you and lift up the cover to the right. Then the indoor controller board can be removed. | **Photo 1**<br>  |
| **4. Removing the electrical parts box**<br>(1) Remove the right side panel.<br>(2) Remove the screw of the electrical parts box cover and controller cover, and remove each the cover.<br>(3) Disconnect the vane motor, the linear expansion valve, the room temperature thermistor, the liquid pipe temperature thermistor and the gas pipe temperature thermistor connector on the indoor controller board.<br>(4) Remove the 2 screws of the electrical parts box.<br>(5) Disconnect the connector of the fan motor lead wire.(Fan motor side)<br>(6) Remove the electrical parts box. | **Photo 2**<br>  |

| OPERATING PROCEDURE | PHOTOS & ILLUSTRATION |
|---|---|
| (7) Remove the indoor controller board case.<br>Then the Power board and the capacitor can be serviced. | **Photo 3**<br>  <br> |
| **5. Removing the vane motor**<br>(1) Remove the right side panel.<br>(2) Remove the screw of the electrical parts box cover, and remove the terminal cover.<br>(3) Remove the 2 screws of the vane motor, and remove the motor from the shaft.<br>(4) Disconnect the vane motor connector on the indoor controller board. | **Photo 4**<br>  <br> |
| **6. Removing the intake grilles**<br>(1) Remove the right side panel.<br>(2) To remove the left side panel, remove the screw on the bottom and the screw on the upper left-hand side. (See Figure 3.)<br>1. Press up this side of the left side panel to unhook the catch on the panel from the catch on the unit.<br>2. Slide the left side panel to the left to remove the panel.<br>Note: Fix the unit to the metal fixture securely<br>(3) Remove the air filters.<br>(4) Hold and press the center cover to remove.<br>(5) Remove the screws of the grilles.<br>(6) Pull the lower side of the grille toward you and slide the upper to the right to remove the grilles. | **Figure 3**<br>  <br><br>**Photo 5**<br>  <br> |
| **7. Removing the drain pan**<br>(1) Remove the left and right side panels.<br>(2) Remove the grilles.<br>(3) Remove the electrical parts box cover.<br>(4) Loosen the drain hose band to remove.<br>(5) Remove the 3 screws of the drain pan, and slide the drain pan toward you to remove. | **Photo 6**<br>  <br> |

| OPERATING PROCEDURE | PHOTOS |
|---|---|

**8. Removing the lineflow fan and the fan motor**

(1) Remove the left and right side panels.
(2) Remove the grilles.
(3) Remove the electrical parts box.
(4) Remove the drain pan.
(5) Loosen the screw that fixes the lineflow fan to the fan motor. (See Photo 7. )
(6) Remove the 4 screws of the motor fixture, and remove the fan motor and the motor fixture at a time (See Photo 8.)
(7) Remove the screws of the left and right motor supports, and remove the motor supports and the fan motor. (See Photo 9.)
(8) Remove the screw of the center support, and remove the support. (See Photo 10. )
(9) Remove the 2 screws on the left and right sides of the heat exchanger, and pull the bearing support toward you. (See Photo 11.)
(10) Pull the left-hand side of the heat exchanger toward you, and remove the lineflow fan.

**Photo 11**

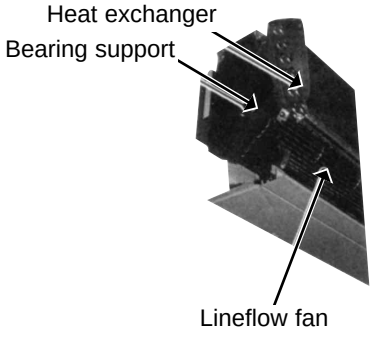



**Photo 7**

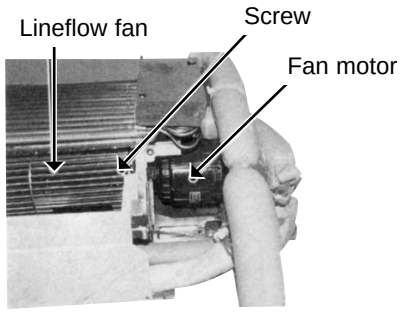



**Photo 8**

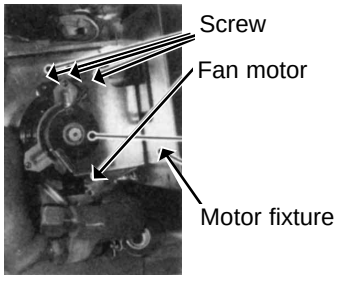



**Photo 9**

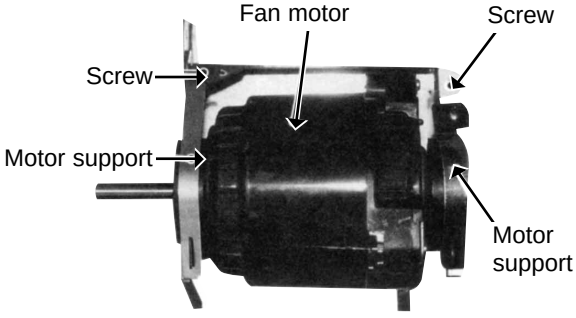
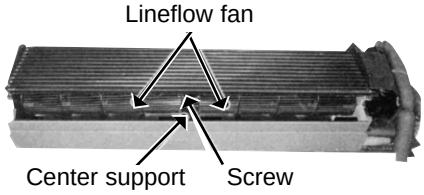
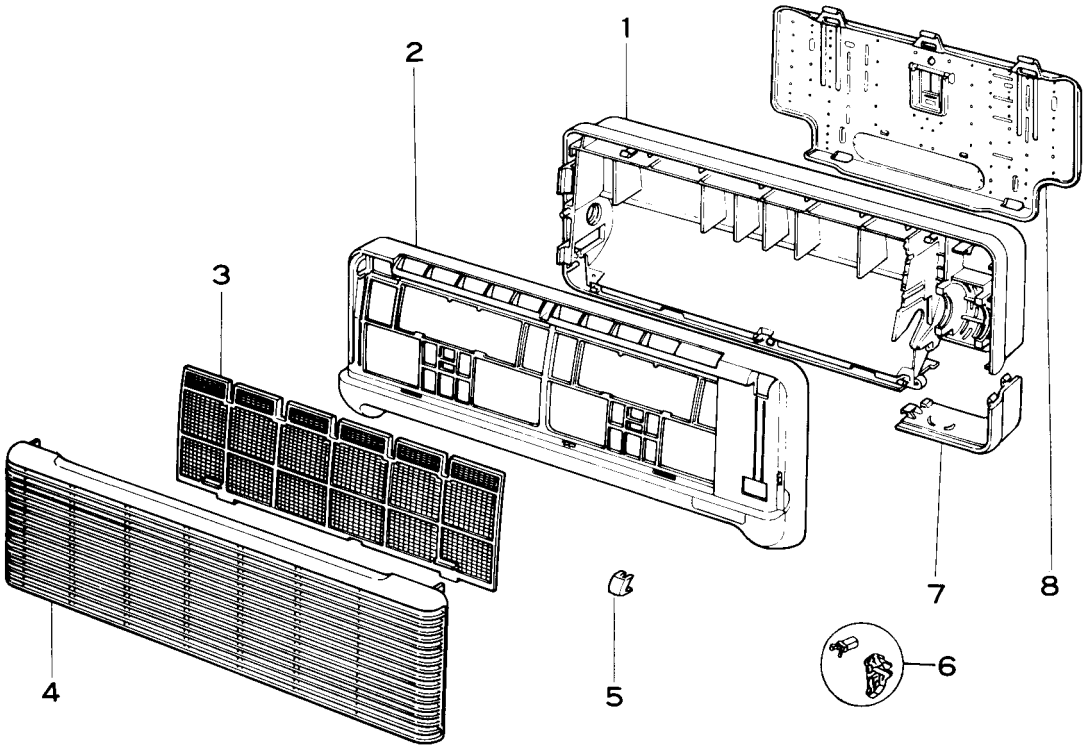



**Photo 10**



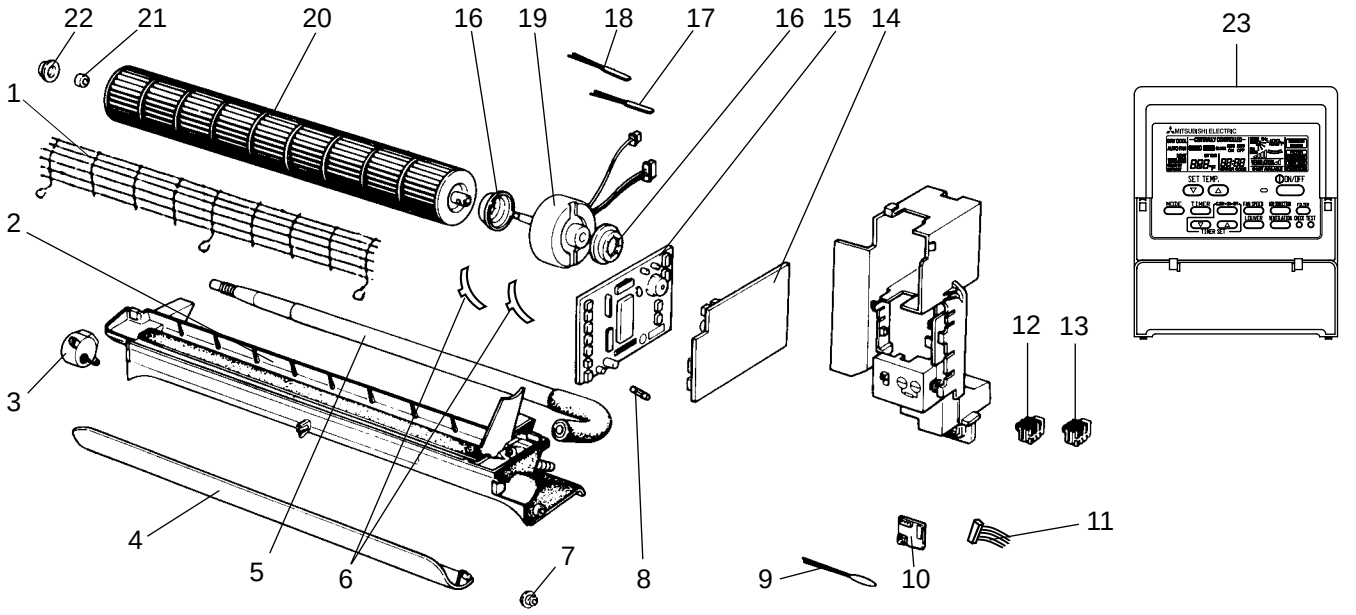
# 11 PARTS LIST

**PANEL PARTS**
**PKFY-08NAMU-A**




| No. | Parts No. | Parts Name | Specifications | Q'ty / set | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PKFY-08NAMU-A | | | | Unit | Amount |
| 1 | R01 22A 635 | BOX | | 1 | | | | | |
| 2 | R01 22A 651 | FRONT PANEL | | 1 | | | | | |
| 3 | R01 22A 500 | AIR FILTER | | 1 | | | | | |
| 4 | R01 22A 691 | INTAKE GRILLE | | 1 | | | | | |
| 5 | R01 22A 096 | SCREW CAP | | 1 | 3PCS/SET | | | | |
| 6 | R01 22A 054 | GRILLE CATCH | | 1 | | | | | |
| 7 | T7W A00 658 | CORNER BOX | | 1 | | | | | |
| 8 | R01 22A 808 | BACK PLATE | | 1 | | | | | |

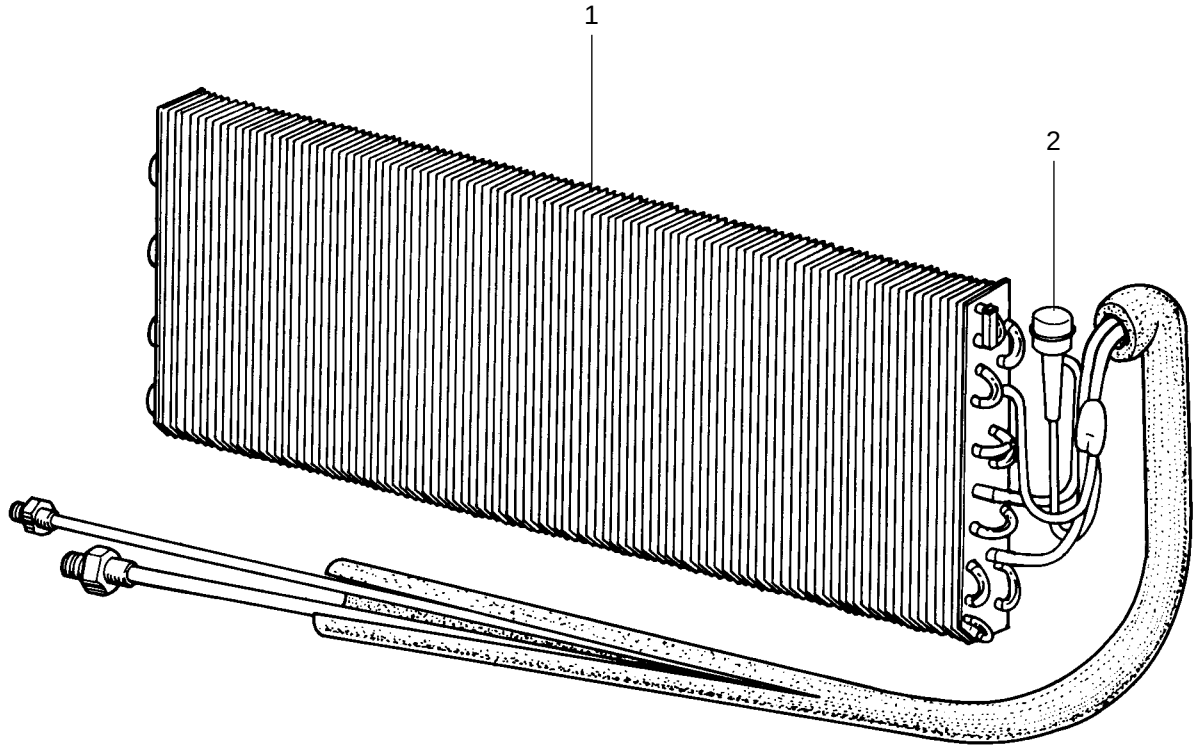
## ELECTRICAL PARTS
## PKFY-08NAMU-A




| No. | Parts No. | Parts Name | Specifications | Q'ty / set | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PKFY-08NAMU-A | | | | Unit | Amount |
| 1 | T7W B00 675 | FAN GUARD | | 1 | | | | | |
| 2 | R01 22A 530 | NOZZLE | | 1 | | | | | |
| 3 | R01 22A 223 | VANE MOTOR | | 1 | | MV | | | |
| 4 | R01 22A 002 | AUTO VANE | | 1 | | | | | |
| 5 | R01 22A 527 | DRAIN HOSE | | 1 | | | | | |
| 6 | R01 22A 126 | MOTOR BAND | SET (LEFT, RIGHT) | 1 | | | | | |
| 7 | R01 07Y 092 | VANE SLEEVE | | 1 | | | | | |
| 8 | T7W 410 239 | FUSE | 250V 6A | 1 | | FUSE | | | |
| 9 | T7W E12 202 | ROOM TEMPERATURE THERMISTOR | | 1 | | TH21 | | | |
| 10 | T7W E00 294 | ADDRESS BOARD | | 1 | | A.B | | | |
| 11 | T7W E00 304 | ADDRESS CABLE | | 1 | | | | | |
| 12 | T7W E18 716 | TERMINAL BLOCK | 3P (L1, L2, GR) | 1 | | TB2 | | | |
| 13 | T7W E19 716 | TERMINAL BLOCK | 2P (M1, M2) | 1 | | TB5 | | | |
| 14 | T7W E05 313 | POWER BOARD | | 1 | | P.B | | | |
| 15 | T7W E29 310 | INDOOR CONTROLLER BOARD | | 1 | | M.B | | | |
| 16 | R01 22A 105 | RUBBER MOUNT | | 2 | | | | | |
| 17 | R01 E38 202 | PIPE TEMPERATURE THERMISTOR | GAS | 1 | | TH23 | | | |
| 18 | T7W E06 202 | PIPE TEMPERATURE THERMISTOR | LIQUID | 1 | | TH22 | | | |
| 19 | T7W E18 762 | FAN MOTOR | PS4N8-KA | 1 | | MF | | | |
| 20 | R01 22A 114 | LINE FLOW FAN | | 1 | | | | | |
| 21 | R01 005 103 | SLEEVE BEARING | | 1 | | | | | |
| 22 | R01 22A 102 | BEARING MOUNT | | 1 | | | | | |
| 23 | — | REMOTE CONTROLLER | PAR-20MAU | 1 | | R.B | | | |

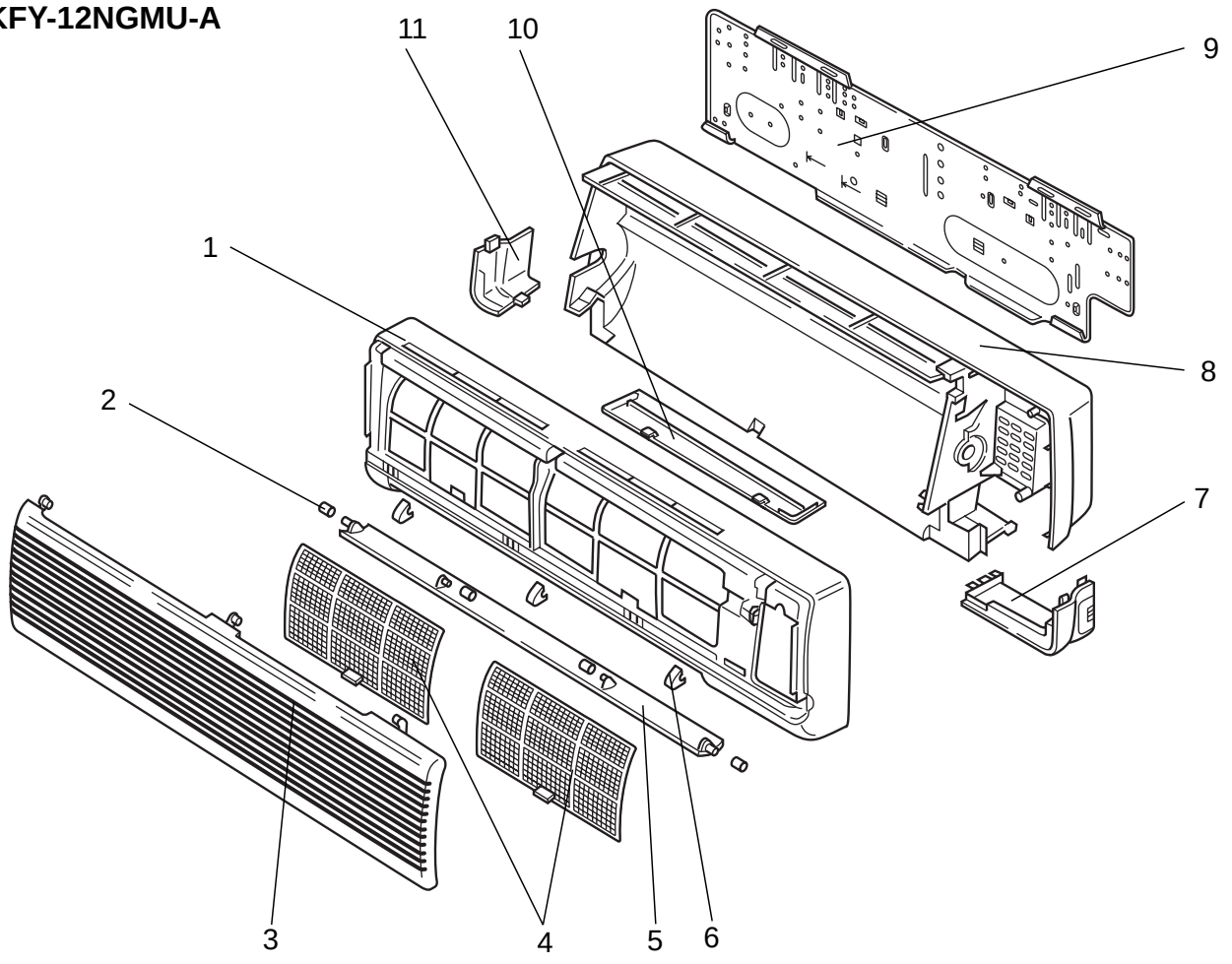
This REMOTE CONTROLLER is made by AIR-CONDITIONING & REFRIGERATION SYSTEMS WORKS,. MITSUBISHI ELECTRIC CORPORATION.

## HEAT EXCHANGER PARTS
## PKFY-08NAMU-A



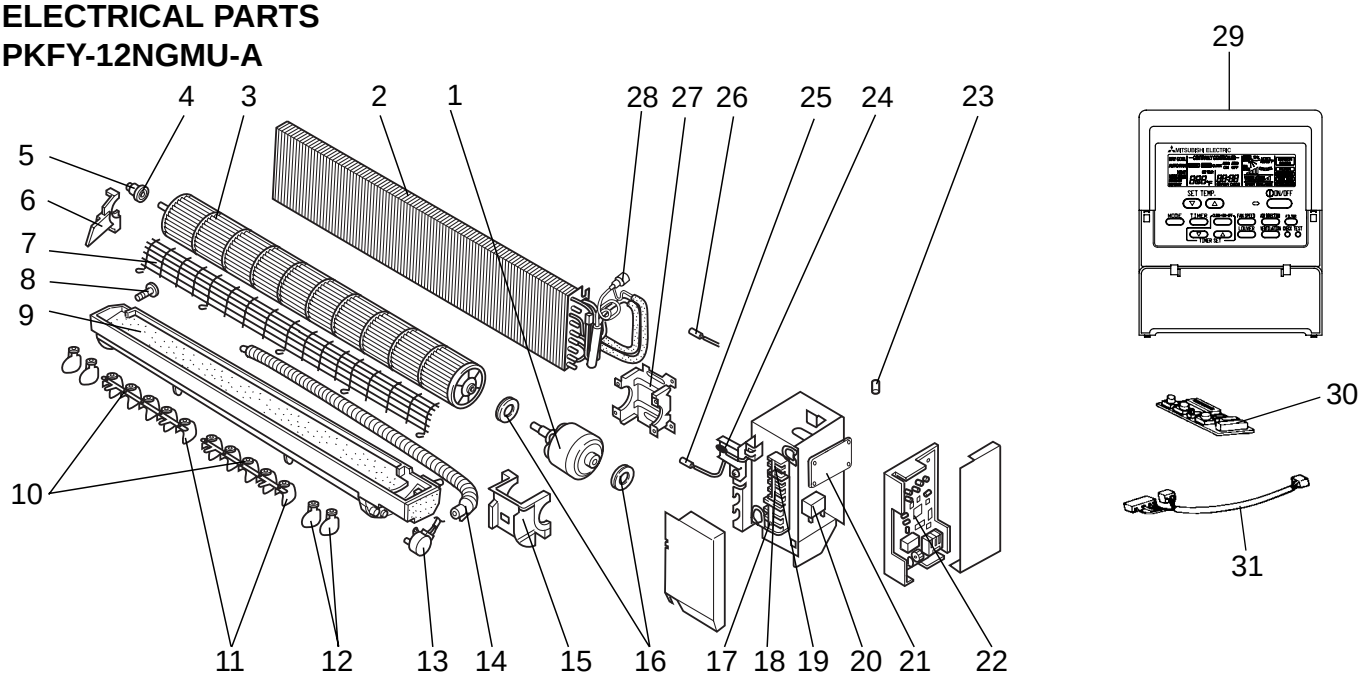

| No. | Parts No. | Parts Name | Specifications | Q'ty / set | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | PKFY-08NAMU-A | | | | Unit | Amount |
| 1 | T7W E84 480 | HEAT EXCHANGER | With connection pipe | 1 | | | | | |
| 2 | R01 E27 401 | LINEAR EXPANSION VALVE | | 1 | | LEV | | | |

## STRUCTURAL PARTS
## PKFY-12NGMU-A




| No. | Parts No. | Parts Name | Specifications | PKFY-12NGMU-A | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Unit | Amount |
| 1 | R01 07Y 651 | FRONT PANEL | | 1 | | | | | |
| 2 | R01 07Y 092 | VANE SLEEVE | | 1 | | | | | |
| 3 | R01 07Y 691 | FRONT GRILLE | | 1 | | | | | |
| 4 | R01 A16 500 | AIR FILTER | | 2 | | | | | |
| 5 | R01 07Y 002 | AUTO VANE | | 1 | | | | | |
| 6 | R01 07Y 096 | SCREW CAP | | 3 | | | | | |
| 7 | R01 09Y 658 | CORNER COVER | | 1 | | | | | |
| 8 | R01 07Y 635 | BOX ASSEMBLY | | 1 | | | | | |
| 9 | R01 07Y 808 | BACK PLATE | | 1 | | | | | |
| 10 | R01 07Y 623 | UNDER COVER | | 1 | | | | | |
| 11 | R01 07Y 658 | CORNER COVER | | 1 | | | | | |

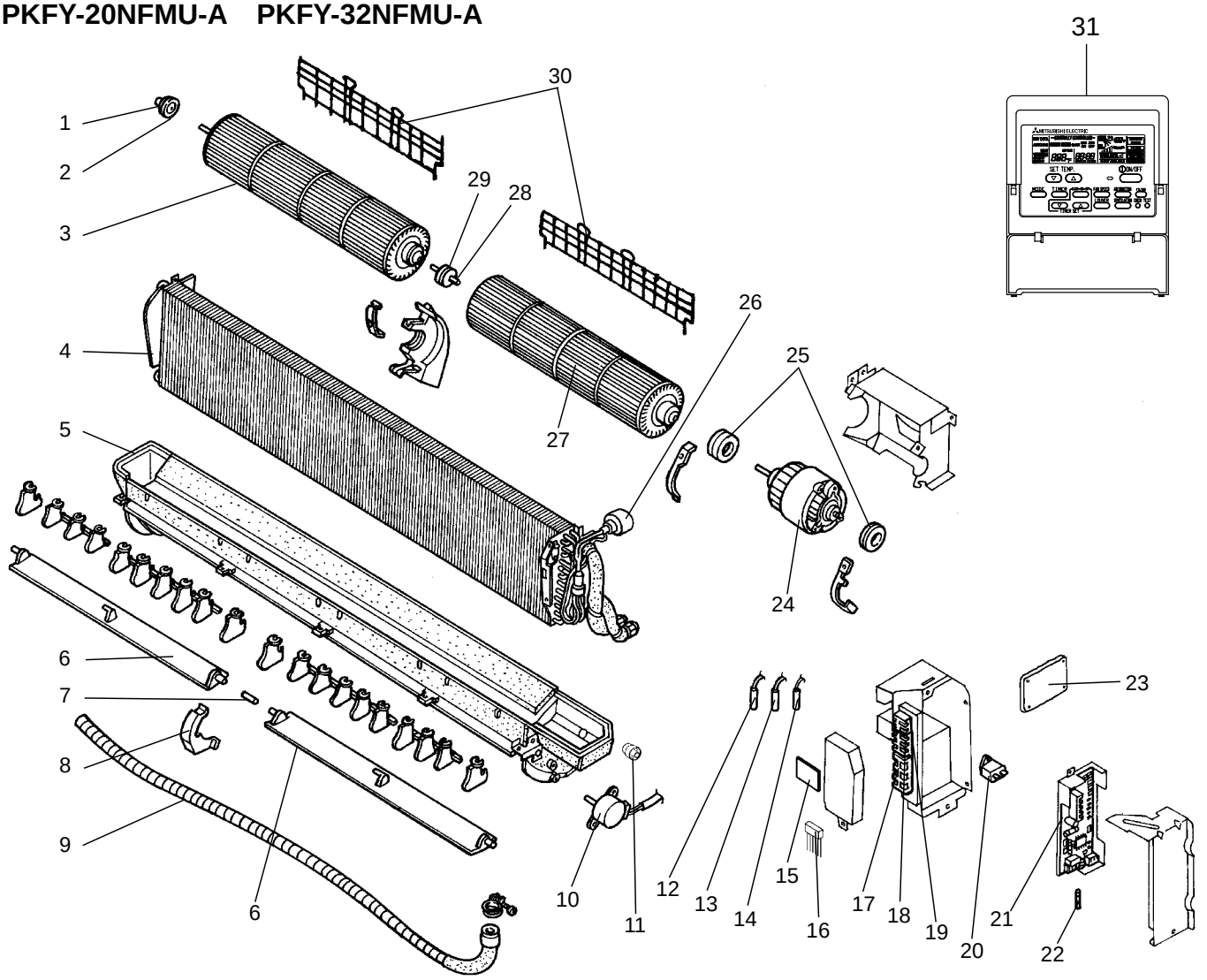
## ELECTRICAL PARTS
## PKFY-12NGMU-A




| No. | Parts No. | Parts Name | Specifications | PKFY- | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 12NGMU-A | | | | Unit | Amount |
| 1 | T7W E19 762 | FAN MOTOR | PM4N30-KA | 1 | | MF | | | |
| 2 | R01 E25 480 | HEAT EXCHANGER | | 1 | | | | | |
| 3 | R01 07Y 114 | LINE FLOW FAN | | 1 | | | | | |
| 4 | R01 005 103 | SLEEVE BEARING | | 1 | | | | | |
| 5 | R01 07Y 102 | BEARING MOUNT | | 1 | | | | | |
| 6 | R01 07Y 106 | BEARING SUPPORT | | 1 | | | | | |
| 7 | T7W A00 675 | FAN GUARD | | 1 | | | | | |
| 8 | R01 07Y 524 | DRAIN PLUG | | 1 | | | | | |
| 9 | R01 07Y 530 | NOZZLE ASSY | | 1 | | | | | |
| 10 | R01 07Y 059 | ARM | | 2 | | | | | |
| 11 | R01 07Y 038 | GUIDE VANE | | 10 | | | | | |
| 12 | R01 09Y 038 | GUIDE VANE | | 4 | | | | | |
| 13 | T7W E04 223 | VANE MOTOR | | 1 | | MV | | | |
| 14 | R01 07Y 527 | DRAIN HOSE | | 1 | | | | | |
| 15 | R01 07Y 135 | MOTOR COVER | | 1 | | | | | |
| 16 | R01 07Y 105 | RUBBER MOUNT | | 2 | | | | | |
| 17 | T7W E11 716 | TERMINAL BLOCK | 3P(L1, L2, GR ) | 1 | | TB2 | | | |
| 18 | T7W E17 716 | TERMINAL BLOCK | 3P(M1,M2,S) | 1 | | TB5 | | | |
| 19 | R01 556 246 | TERMINAL BLOCK | 2P(1,2) | 1 | | TB15 | | | |
| 20 | T7W E11 255 | RUN CAPACITOR | 2.0$\mu$F 440V | 1 | | C | | | |
| 21 | R01 E02 313 | POWER BOARD | | 1 | | P.B | | | |
| 22 | T7W E28 310 | CONTROLLER BOARD | | 1 | | I.B | | | |
| 23 | T7W 410 239 | FUSE | 250V 6A | 1 | | FUSE | | | |
| 24 | R01 E26 202 | ROOM THERMISTOR | | 1 | | TH21 | | | |
| 25 | R01 E28 202 | LIQUID PIPE THERMISTOR | | 1 | | TH22 | | | |
| 26 | T7W E25 202 | GAS PIPE THERMISTOR | | 1 | | TH23 | | | |
| 27 | R01 07Y 130 | MOTOR SUPPORT | | 1 | | | | | |
| 28 | R01 E27 401 | LINEAR EXPANSION VALVE | | 1 | | LEV | | | |
| 29 | — | REMOTE CONTROLLER | PAR-20MAU | 1 | | | | | |
| 30 | T7W E00 294 | ADDRESS BOARD | | 1 | | A.B | | | |
| 31 | R01 85Y 304 | ADDRESS CABLE | | 1 | | | | | |

This REMOTE CONTROLLER is made by AIR-CONDITIONING & REFRIGERATION SYSTEMS WORKS,. MITSUBISHI ELECTRIC CORPORATION.

## ELECTRICAL PARTS
## PKFY-20NFMU-A PKFY-32NFMU-A

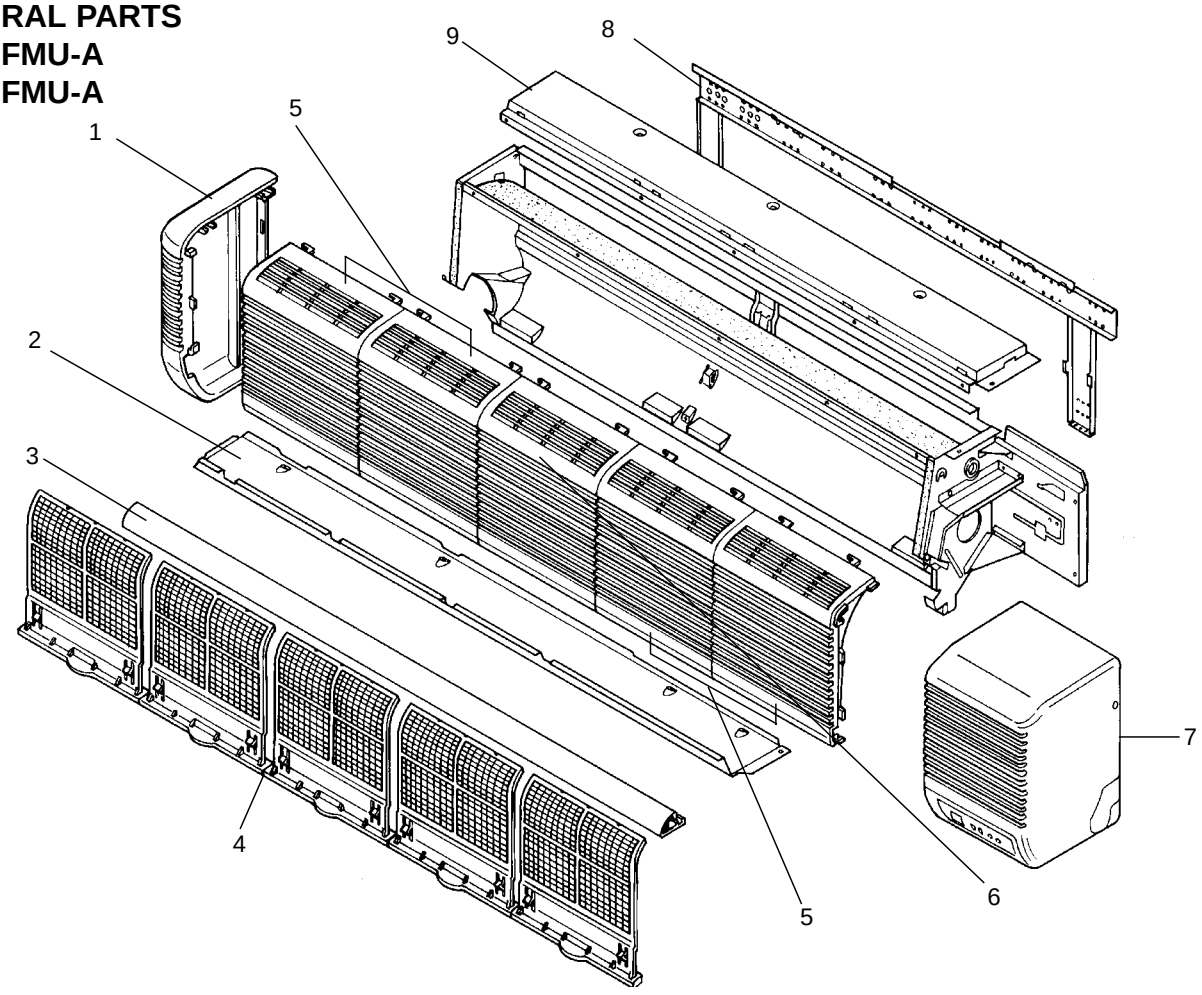



| No. | Part No. | Part Name | Specification | Q'ty / set | | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PKFY- | | | | | Unit | Amount |
| | | | | 20NFMU-A | 32NFMU-A | | | | | |
| 1 | R01 Z61 102 | BEARING MOUNT | | 1 | 1 | | | | | |
| 2 | R01 12G 103 | SLEEVE BEARING | | 1 | 1 | | | | | |
| 3 | R01 13G 114 | LEFT LINEFLOW FAN | | 1 | | | | | | |
| | R01 16G 114 | LEFT LINEFLOW FAN | | | 1 | | | | | |
| 4 | T7W E97 480 | HEAT EXCHANGER | | 1 | | | | | | |
| | T7W E98 480 | HEAT EXCHANGER | | | 1 | | | | | |
| 5 | T7W E13 529 | DRAIN PAN | | 1 | | | | | | |
| | T7W E14 529 | DRAIN PAN | | | 1 | | | | | |
| 6 | R01 12G 002 | AUTO VANE | | 2 | | | | | | |
| | R01 16G 002 | AUTO VANE | | | 2 | | | | | |
| 7 | R01 12G 063 | JOINT SHAFT | | 1 | 1 | | | | | |

| No. | Part No. | Part Name | Specification | Q'ty / set | | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PKFY- | | | | | Unit | Amount |
| | | | | 20NFMU-A | 32NFMU-A | | | | | |
| 8 | R01 12G 621 | CENTER COVER | | 1 | 1 | | | | | |
| 9 | R01 KV5 527 | DRAIN HOSE | | 1 | 1 | | | | | |
| 10 | T7W E03 223 | VANE MOTOR | | 1 | 1 | | MV | | | |
| 11 | R01 12G 523 | DRAIN SOCKET | | 1 | 1 | | | | | |
| 12 | R01 E58 202 | GAS PIPE THERMISTOR | | 1 | 1 | | TH23 | | | |
| 13 | T7W E12 202 | ROOM TEMPERATURE THERMISTOR | | 1 | 1 | | TH21 | | | |
| 14 | R01 E02 202 | LIQUID PIPE THERMISTOR | | 1 | 1 | | TH22 | | | |
| 15 | T7W E00 294 | ADDRESS BOARD | | 1 | 1 | | A.B | | | |
| 16 | R01 05A 304 | ADDRESS CABLE | | 1 | 1 | | | | | |
| 17 | T7W E11 716 | TERMINAL BLOCK | 3P(L1,L2,GR) | 1 | 1 | | TB2 | | | |
| 18 | T7W E17 716 | TERMINAL BLOCK | 3P(M1,M2,S) | 1 | 1 | | TB5 | | | |
| 19 | R01 556 246 | TERMINAL BLOCK | 2P(1,2) | 1 | 1 | | TB15 | | | |
| 20 | T7W E03 255 | FAN MOTOR CAPACITOR | 2.5μF 440V | 1 | 1 | | C | | | |
| 21 | T7W E28 310 | INDOOR CONTROLLER BOARD | | 1 | 1 | | I.B | | | |
| 22 | T7W 410 239 | FUSE | 250V 6A | 1 | 1 | | FUSE | | | |
| 23 | R01 E02 313 | POWER BOARD | | 1 | 1 | | P.B | | | |
| 24 | T7W B00 762 | FAN MOTOR | PN4N45-K | 1 | | | MF | | | |
| | T7W B01 762 | FAN MOTOR | PN4N70-K | | 1 | | MF | | | |
| 25 | R01 13G 105 | RUBBER MOUNT | | 2 | | | | | | |
| | R01 16G 105 | RUBBER MOUNT | | | 2 | | | | | |
| 26 | R01 E27 401 | LINEAR EXPANSION VALVE | | 1 | | | LEV | | | |
| | T7W E09 401 | LINEAR EXPANSION VALVE | | | 1 | | LEV | | | |
| 27 | R01 13G 115 | RIGHT LINE FLOW FAN | | 1 | | | | | | |
| | R01 16G 115 | RIGHT LINE FLOW FAN | | | 1 | | | | | |
| 28 | R01 005 103 | SLEEVE BEARING | | 1 | 1 | | | | | |
| 29 | R01 KV5 102 | BEARING MOUNT | | 1 | 1 | | | | | |
| 30 | T7W B02 675 | FAN GUARD | | 2 | | | | | | |
| | T7W B03 675 | FAN GUARD | | | 2 | | | | | |
| 31 | — | REMOTE CONTROLLER | PAR-20MAU | 1 | 1 | | R.B | | | |

This REMOTE CONTROLLER is made by AIR-CONDITIONING & REFRIGERATION SYSTEMS WORKS,. MITSUBISHI ELECTRIC CORPORATION.

## STRUCTURAL PARTS
## PKFY-20NFMU-A
## PKFY-32NFMU-A

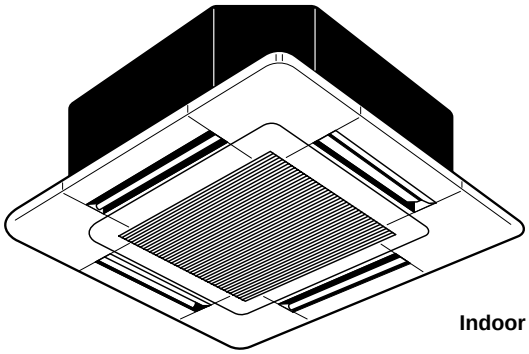



| No. | Part No. | Part Name | Specification | Q'ty / set | | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PKFY- | | | | | Unit | Amount |
| | | | | 20NFMU-A | 32NFMU-A | | | | | |
| 1 | R01 12G 662 | LEFT SIDE PANEL | | 1 | 1 | | | | | |
| 2 | R01 E01 812 | UNDER PLATE | | 1 | | | | | | |
| | R01 E00 812 | UNDER PLATE | | | 1 | | | | | |
| 3 | R01 E00 811 | NOSE | | 1 | | | | | | |
| | R01 E01 811 | NOSE | | | 1 | | | | | |
| 4 | R01 A17 500 | AIR FILTER | | 4 | 5 | | | | | |
| 5 | R01 12G 691 | INTAKE GRILLE | | 2 | 2 | | | | | |
| 6 | R01 16G 692 | INTAKE GRILLE | | | 1 | | | | | |
| 7 | R01 12G 661 | RIGHT SIDE PANEL | | 1 | 1 | | | | | |
| 8 | R01 12G 808 | BACK PLATE | | 1 | | | | | | |
| | R01 16G 808 | BACK PLATE | | | 1 | | | | | |
| 9 | R01 E01 641 | TOP PLATE | | 1 | | | | | | |
| | R01 E00 641 | TOP PLATE | | | 1 | | | | | |

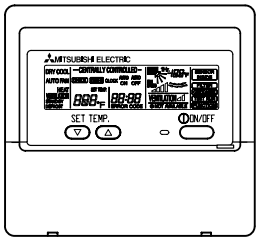
# PLFY-12NAMU-A
# PLFY-20NAMU-A
# PLFY-24NAMU-A
# PLFY-32NAMU-A
# PLFY-40NAMU-A

## CONTENTS

# 1 FEATURES



Indoor Unit




Microprocessor
Remote controller

| Models | Cooling capacity / Heating capacity |
|---|---|
| PLFY-12NAMU-A | 12,000 / 13,000 Btu/h |
| PLFY-20NAMU-A | 20,000 / 22,500 Btu/h |
| PLFY-24NAMU-A | 24,000 / 26,500 Btu/h |
| PLFY-32NAMU-A | 32,000 / 36,000 Btu/h |
| PLFY-40NAMU-A | 40,000 / 39,000 Btu/h |

## 1. SPACE-SAVING CENTRALLY LOCATED CEILING RECESSED INSTALLATION

## 2. 4-WAY AIR FLOW SYSTEM

This series allows you to select from 2, 3, and 4 way air flow directions according to your requirement. As a result, you get superb flexibility in choosing a configuration that gives you maximum cooling/heating efficiency in a neat and unobstructive installation.

## 3. ADVANCED MICROPROCESSOR CONTROL

**(1) Easy to use Microprocessor (remote controller)**

**1) Ultra-Thin Remote Controller**

The streamlined, wide 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, 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 or off automatically at the 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 memorised 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.

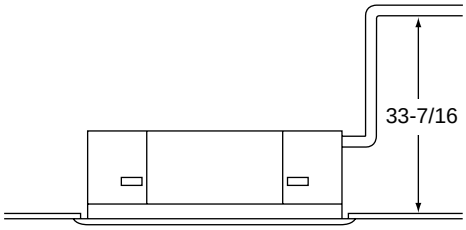
**(3) Automatic Cooling/Heating Changeover Operation**

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.

## 4. DRAIN PUMP FOR EASY PIPE CONNECTION (DRAIN LIFT-UP MECHANISM)

This mechanism, with its capacity to raise drain water 33-7/16 inch above the ceiling line, is convenient for removing water and avoiding piping contact with beams, etc.




## 5. FRESH AIR INTAKE AND BRANCH DUCTING ARE AVAILABLE (on-site work)

## 6. HIGH RELIABILITY AND EASY SERVICING.

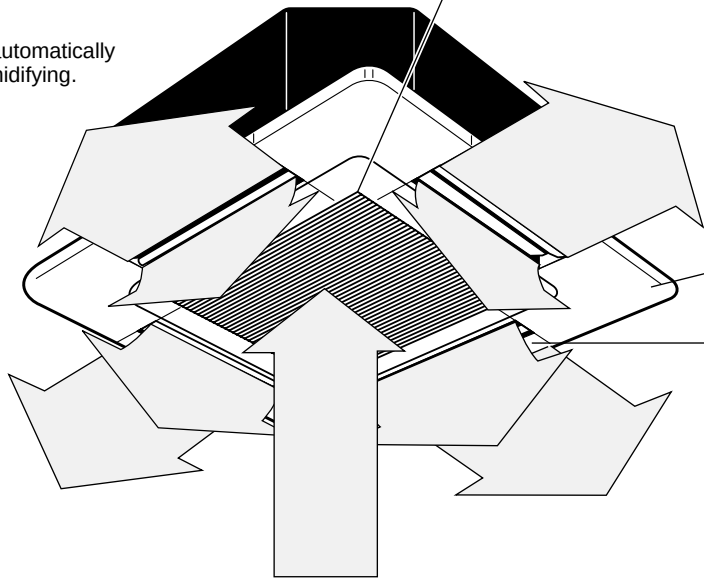
In addition to the self-diagnostic function, units are also equipped with a 3-minute time delay mechanism (cooling), an auto restart function, an emergency operation function, a test run switch, etc., to assure high reliability and easy servicing.

## 7. 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.

# 2 PART NAMES AND FUNCTIONS

## ● Indoor (Main) Unit




## ● Remote controller

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

### ● Operation buttons

**TEMP. ADJUSTMENT button**

This sets the room temperature. The temperature setting can be performed in 2°F units

Setting range

Cooler 67°F to 87°F

Heater 63°F to 83°F

**TIME SETTING button**

This sets the current time, start time and stop time.

**AIR SPEED button**

This sets the ventilation fan speed.

**ON/OFF button**

This switches between the operation and stop modes each time it is pressed. The lamp on this button lights during operation.

**TIMER button**

This switches between continuous operation and the timer operation.

**AIR DIRECTION button**

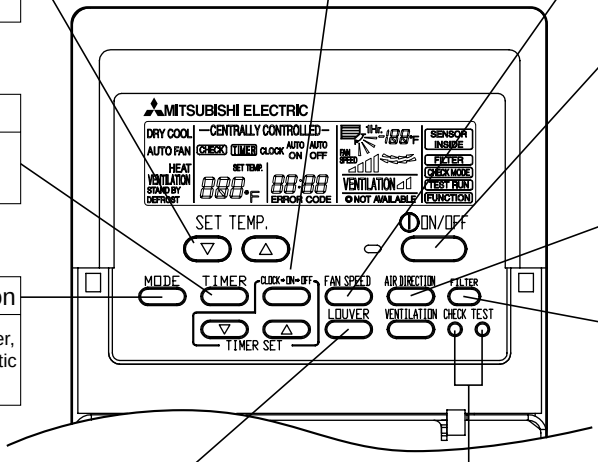
This adjusts the vertical angle of the ventilation.

**OPERATION SWITCH button**

Press this button to switch the cooler, electronic dry (dehumidify), automatic and heater modes.

**FILTER button**

This resets the filter service indication display




**LOUVER button**

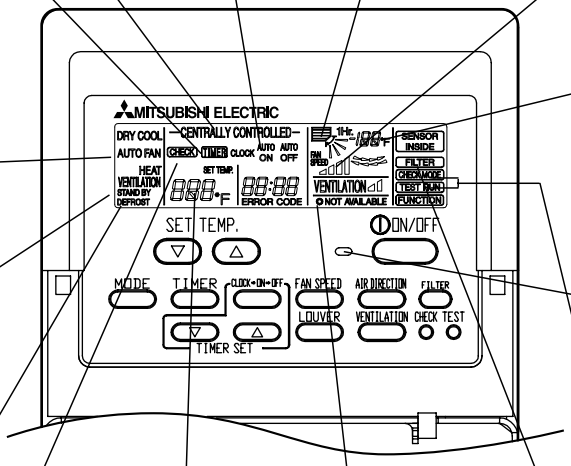
This switch the horizontal fan motion ON and OFF.

(Not available for this model.)

**CHECK-TEST RUN button**

Only press this button to perform an inspection check or test operation. Do not use it for normal operation.

## ● 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 DIRECTION 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.

**AIR SPEED display**

The selected fan speed is displayed.

**ROOM TEMPERATURE display**

The temperature of the return air is displayed during operation. The display range is 46°F to 102°F. The display flashes 46°F when the actual temperature is less than 46°F and flashes 102°F when the actual temperature is greater than 102°F.

**OPERATION MODE display**

This indicates the operation mode.

**STANDBY display**

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

**Operation lamp**

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

**CHECK MODE / TEST RUN display**

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

**DEFROST display**

This indicates when the defrost operation is performed.

**FILTER display**

This lamp lights when the filter need to be cleaned.

**CHECK display**

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

**SET TEMPERATURE display**

This displays the selected set temperature.

**POWER display**

This lamp lights when electricity is supplied to the unit.

**Caution**

- Only the Power display lights when the unit is stopped and power supplied to the unit.
- When the central control remote control unit, which is sold separately, is used the ON-OFF button, operation switch button and TEMP. adjustment button do not operate.
- “NOT AVAILABLE” is displayed when the Air speed button is pressed. This indicates that this room unit is not equipped with the fan direction adjustment function and the louver function.
- When power is turned ON for the first time, it is normal that “H0” is displayed on the room temperature indication (For max. 2minutes). Please wait until this “H0” indication disappear then start the operation.

# 3 SPECIFICATIONS

## 3-1. Specifications

| Item | | | | PLFY-12NAMU-A | PLFY-20NAMU-A | PLFY-24NAMU-A | PLFY-32NAMU-A | PLFY-40NAMU-A |
|---|---|---|---|---|---|---|---|---|
| Power | | | V･Hz | Single phase 208/230V 60Hz | | | | |
| Cooling capacity | | | Btu/h | 12,000 | 20,000 | 24,000 | 32,000 | 40,000 |
| Heating capacity | | | Btu/h | 13,000 | 22,500 | 26,500 | 36,000 | 39,000 |
| Electric characteristic | Input | Cooling | kW | 0.14 | 0.14 | 0.14 | 0.27 | 0.27 |
| | | Heating | kW | 0.14 | 0.14 | 0.14 | 0.27 | 0.27 |
| | Current | Cooling | A | 0.68 | 0.68 | 0.68 | 1.30 | 1.30 |
| | | Heating | A | 0.68 | 0.68 | 0.68 | 1.30 | 1.30 |
| Exterior (munsell symbol) | | | — | Unit : Galvanized sheets with gray heat insulation Grills : ABS resin Munsell<0.70Y 8.59/0.97> | | | | |
| Dimensions | | Height | in | 10-3/16<1-3/16> | | | 11-3/4<1-3/16> | |
| | | Width | in | 33-1/16<37-3/8> | | | | |
| | | Depth | in | 33-1/16<37-3/8> | | | | |
| Heat exchanger | | | — | Cross fin | | | | |
| Fan | Fan × No | | — | Turbo fan × 1 | | | | |
| | Air flow ※3 | DRY | CFM | 390-420-460-490 | 490-530-570-640 | 530-570-640-710 | 710-810-920-990 | 780-880-990-1060 |
| | | WET | CFM | 350-380-410-440 | 470-500-530-600 | 500-530-600-670 | 670-770-870-930 | 730-830-930-1000 |
| | External static pressure | | Pa | 0 | | | | |
| | Fan motor output | | kW | 0.070 | | | 0.110 | |
| Insulator | | | — | Polyethylene sheet | | | | |
| Air filter | | | — | PP honey comb fabric | | | | |
| Pipe dimensions | | Gas side | in | 1/2" | 5/8" | | | 3/4" |
| | | Liquid side | in | 1/4" | 3/8" | | | |
| Unit drain pipe size | | | in | PVC with O.D.1-1/4" | | | | |
| Noise level ※3 | | | dB | 24-27-28-30 | 27-28-31-33 | 28-30-33-34 | 34-36-40-41 | 37-40-43-44 |
| Product weight | | | lb | 49<11> | 53<11> | | 66<11> | |

Note 1. Rating conditions
Cooling : Indoor : D.B. 80°F W.B. 67°F
outdoor : D.B. 95°F W.B. 75°F
Heating : Indoor : D.B. 70°F
outdoor : D.B. 47°F W.B. 43°F

Note 2. The number indicated in < > is just for the grille.

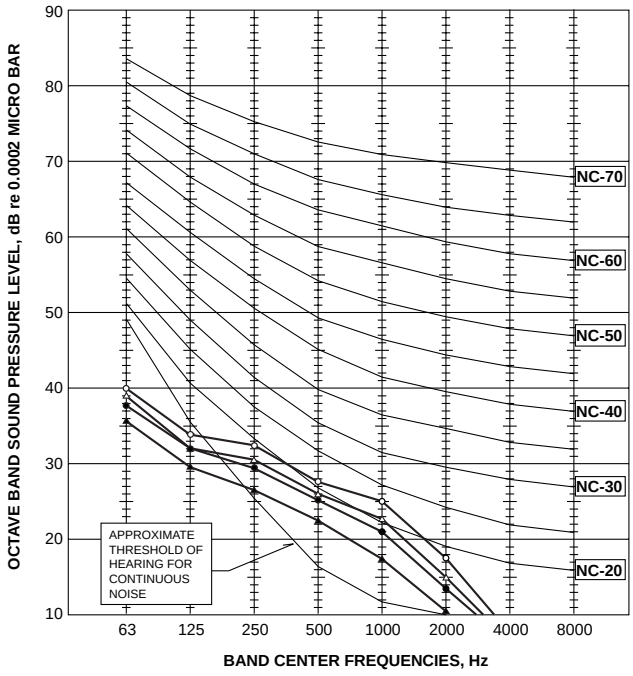
※ 3. Air flow and the noise level are indicated as Low - Medium2 - Medium1 - High.

• Connected outdoor unit is PURY-80TMU or PURY-100TMU.

## 3-2. NOISE CRITERION CURVES

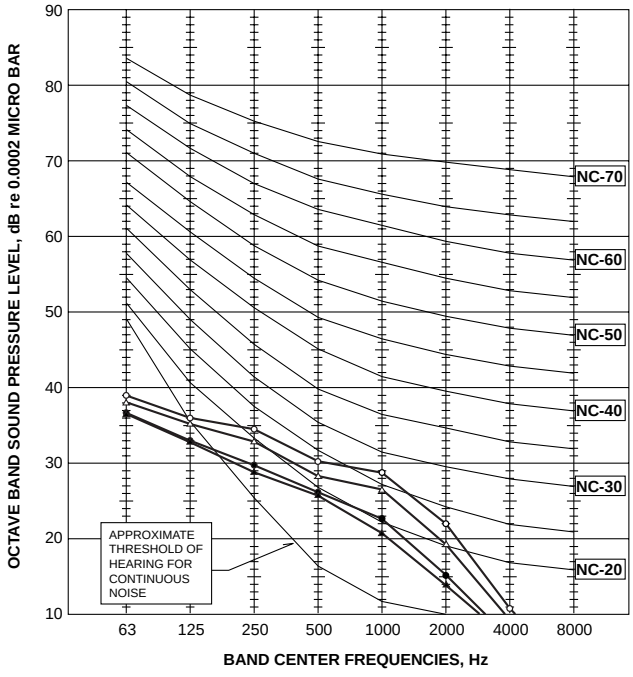
### PLFY-12NAMU-A

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 30 | ○—○ |
| Med1 | 28 | △—△ |
| Med2 | 27 | ●—● |
| Lo | 24 | ▲—▲ |



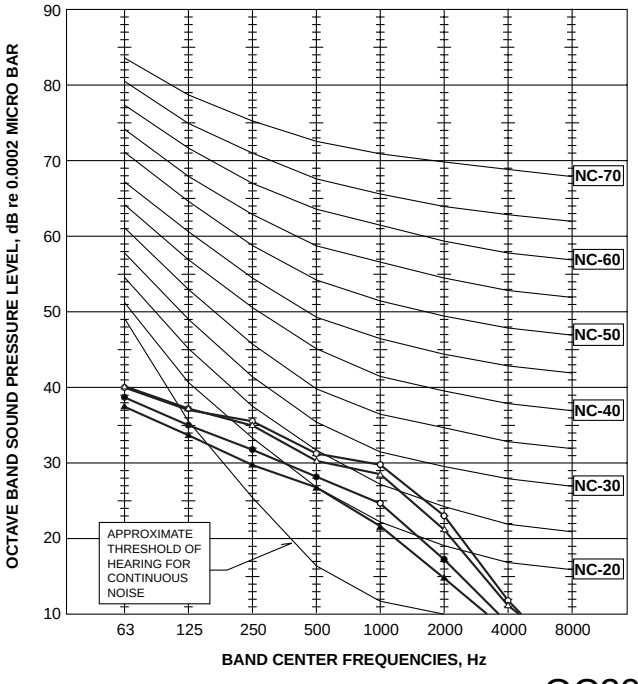

### PLFY-20NAMU-A

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 33 | ○—○ |
| Med1 | 31 | △—△ |
| Med2 | 28 | ●—● |
| Lo | 27 | ▲—▲ |



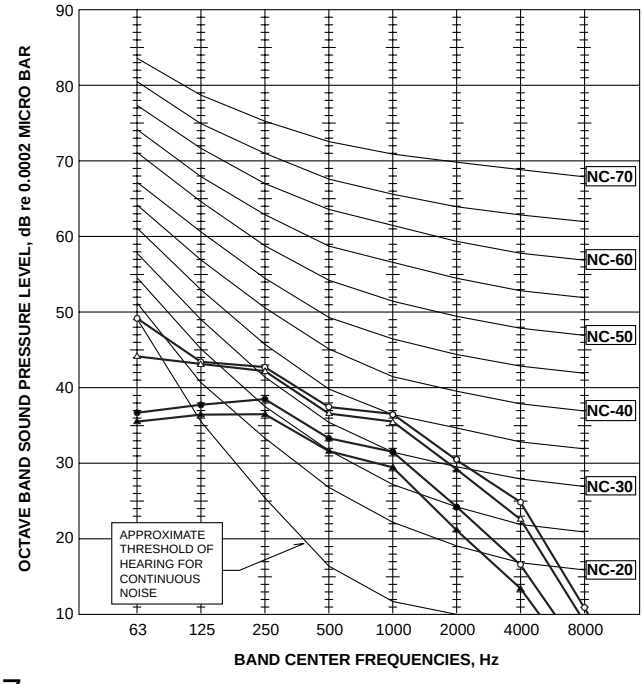

### PLFY-24NAMU-A

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 34 | ○—○ |
| Med1 | 33 | △—△ |
| Med2 | 30 | ●—● |
| Lo | 28 | ▲—▲ |



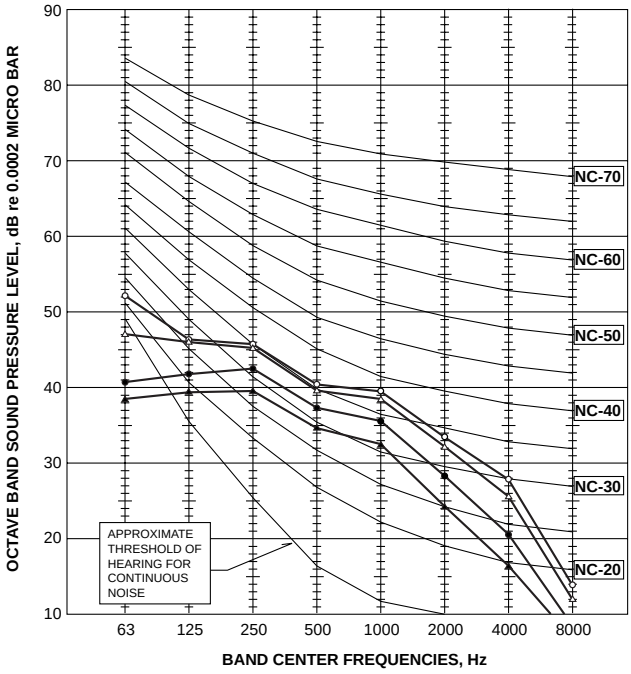

### PLFY-32NAMU-A

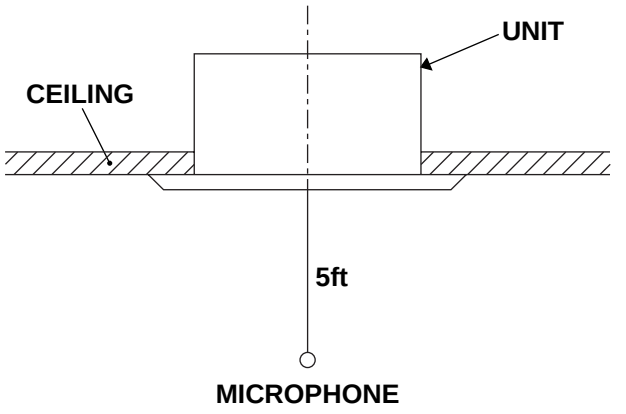
| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 41 | ○—○ |
| Med1 | 40 | △—△ |
| Med2 | 36 | ●—● |
| Lo | 34 | ▲—▲ |



## PLFY-40NAMU-A

| NOTCH | SPL(dB) | LINE |
|---|---|---|
| Hi | 44 | |
| Med1 | 43 | |
| Med2 | 40 | |
| Lo | 37 | |




**Ambient temperature 80˚F**

**Test conditions are based on JIS Z8731**

## 3-3. Electrical parts specifications

| Model / Parts name | Symbol | PLFY-12NAMU-A | PLFY-20NAMU-A | PLFY-24NAMU-A | PLFY-32NAMU-A | PLFY-40NAMU-A |
|---|---|---|---|---|---|---|
| Room temperature thermistor | TH21 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ | | | | |
| Liquid pipe thermistor | TH22 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ | | | | |
| Gas pipe thermistor | TH23 | Resistance 30°F/15.8kΩ, 50°F/9.6kΩ, 70°F/6.0kΩ, 80°F/4.8kΩ, 90°F/3.9kΩ, 100°F/3.2kΩ | | | | |
| Fuse (Indoor controller board) | FUSE | 250V 6A | | | | |
| Fan motor (with inner-thermostat) | MF | 6-pole OUTPUT 70W D17D6P70MS | | | 6-pole OUTPUT 110W D176P110MS | |
| | | Inner-thermostat OPEN 266°F ± 9°F | | | | |
| Fan motor capacitor | C | 3.0μF × 440V | | | 7.0μF × 440V | |
| Vane motor | MV | MSBPC20M13<br>DC12V 300Ω/phase | | | | |
| Drain-up mechanism | DP | PLD-12220ME-2<br>INPUT 12/10.8W 24 ℓ /Hr | | | | |
| Drain sensor | DS | Thermistor resistance 30°F/6.3kΩ, 50°F/3.9kΩ, 70°F/2.5kΩ, 80°F/2.0kΩ, 90°F/1.6kΩ, 100°F/1.3kΩ | | | | |
| Linear expansion valve | LEV | DC12V Stepping motor drive port dimension 3.2Ω (0~2000pulse)<br>EDM-40YHME | | | DC12V Stepping motor drive port dimension 5.2Ω (0~2000pulse)<br>EDM-80YHME | |
| Electric heater (Condensation proof) | H2 | 240V 21.8W | | | | |
| Power supply terminal block | TB2 | (L1, L2, GR) 330V 30A | | | | |
| Transmission terminal block | TB5 | (M1, M2, S) 250V 20A | | | | |
| MA remote controller terminal block | TB15 | (1, 2) 250V 10A | | | | |

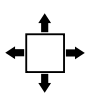
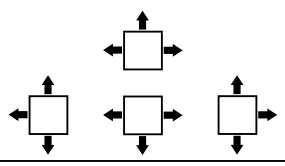
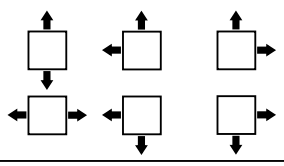
# 4 4-WAY AIR FLOW SYSTEM

## 4-1. Placement of the air outlets

• For this grille, the blowout direction comes in 11 patterns.
Also, by setting the dip switches (SWA and SWB) on the address board to the appropriate settings, you can adjust the air flow and speed. Select the settings from Table according to the location in which you want to install the unit.

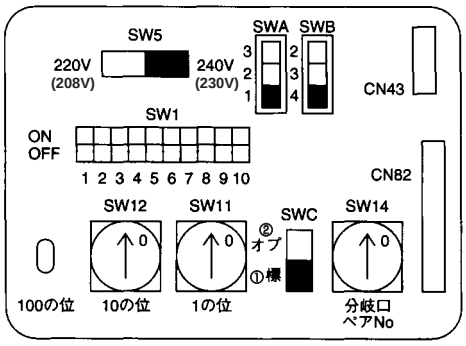
1) Decide on the pattern of the airflow direction.

<Table 1>

| Blowout direction pattern | 4-direction | 3-direction | 2-direction |
|---|---|---|---|
| | Pattern 1 Factory setting | Pattern 4 One air outlet fully closed | Pattern 6 Two air outlet fully closed |
| |  |  |  |

Note1.
For 3 and 2-directional, please use the air outlet shutter plate (option).

2) According to the number of air outlets and height of the ceiling to install the unit, be sure to set the up switches (SWA, SWB) on the indoor board to the appropriate setting.
• Correspondence of ceiling heights to numbers of air outlets.




PLFY-12, 20NAMU-A (Unit : feet)

| SWB \ SWA | ① Standard | ② High ceiling ① | ③ High ceiling ② |
|---|---|---|---|
| 4 4 direction | 8.9 | 9.8 | 11.5 |
| 3 3 direction | 9.8 | 10.8 | 11.5 |
| 2 2 direction | 10.8 | 11.5 | — |

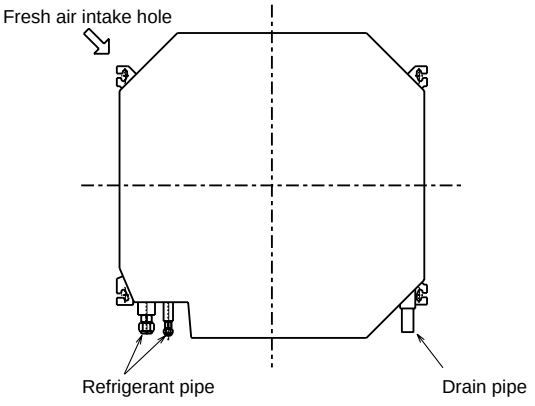
PLFY-24, 32, 40NAMU-A (Unit : feet)

| SWB \ SWA | ① Standard | ② High ceiling ① | ③ High ceiling ② |
|---|---|---|---|
| 4 4 direction | 10.5 | 11.8 | 13.8 |
| 3 3 direction | 11.8 | 13.1 | 13.8 |
| 2 2 direction | 13.1 | 13.8 | — |

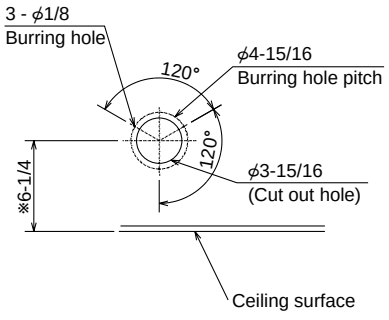
## 4-2. Fresh air intake (Installation of site)

• At the time of installation, use the duct holes (cutout) located at the positions shown in following diagram, as and when required.

Note :
Be sure to add5-5/16inch to the dimensions in the diagram that are marked with a "※" if installing a multi function casement (Option)

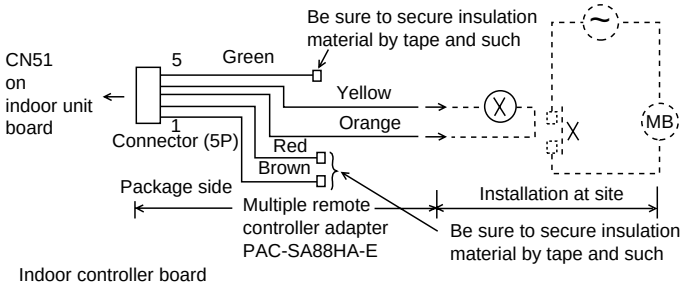


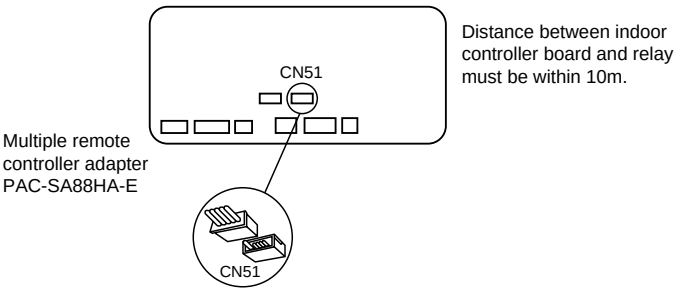

Fresh air intake hole diagram (Unit : inch)




## 4-3. Interlocking operation method with duct fan (Booster fan)

• Whenever the indoor unit is operating, the duct fun also operates.
(1)Connect the optional multiple remote controller adapter(PAC-SA88HA-E)to the connector CN51 on the indoor controller board.
(2)Drive the relay after connecting the 12V DC relay between the Yellow and Orange connector lines.
(※)Use a relay under 1W.
MB: Electromagnetic switch power relay for duct fan.
X: Auxiliary relay (12V DC LY-1F)

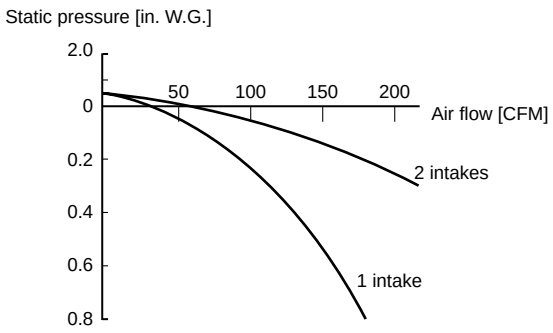


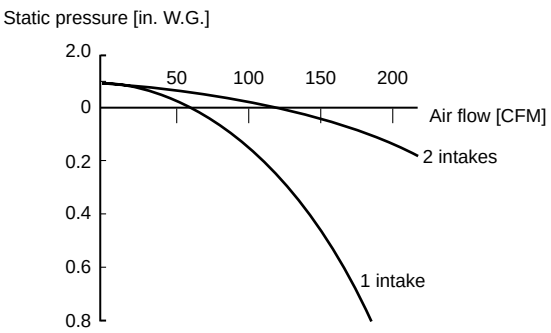
## 4-4. Fresh air intake amount & static pressure characteristics

### 1 PLFY-12, 20, 24NAMU-A

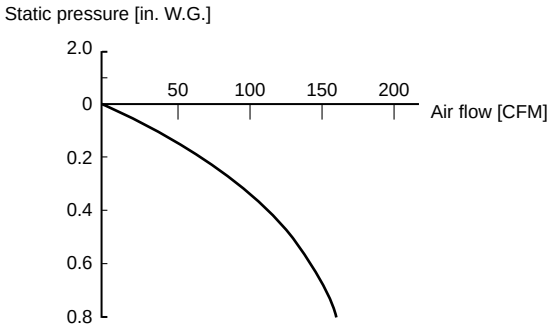
#### Multifunction casement + Standard filter



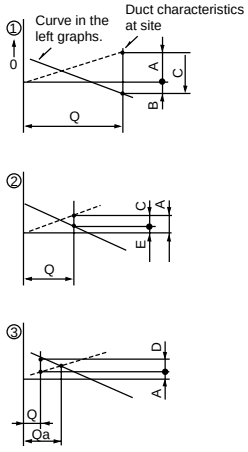

#### Multifunction casement + High efficiency filter




#### Taking air into the unit



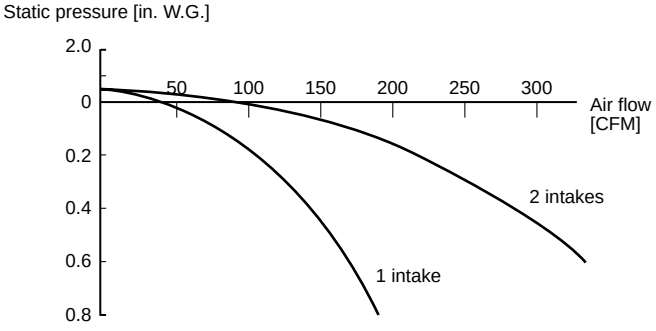

How to read curves



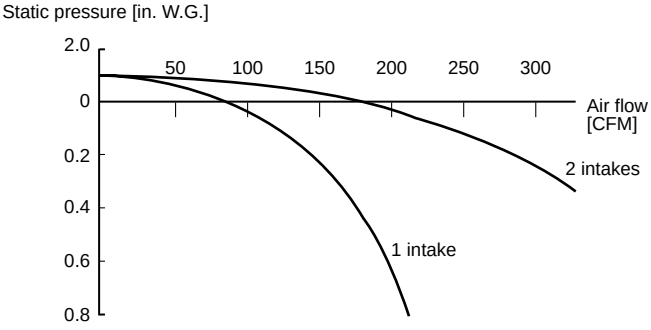

Q···Planned amount of fresh air intake <CFM>
A···Static pressure loss of fresh air intake duct system with air flow amount Q <in.W.G.>
B···Forced static pressure at air conditioner inlet with air flow amount Q <in.W.G.>
C···Static pressure of booster fan with air flow amount Q <in.W.G.>
D···Static pressure loss increase amount of fresh air intake duct system for air flow amount Q <in.W.G.>
E···Static pressure of indoor unit with air flow amount Q <in.W.G.>
Qa···Estimated amount of fresh air intake with out D <CFM>

### 2 PLFY-32, 40NAMU-A

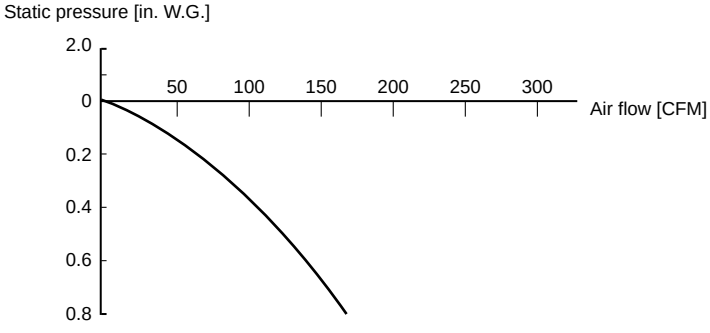
#### Multifunction casement + Standard filter




#### Multifunction casement + High efficiency filter



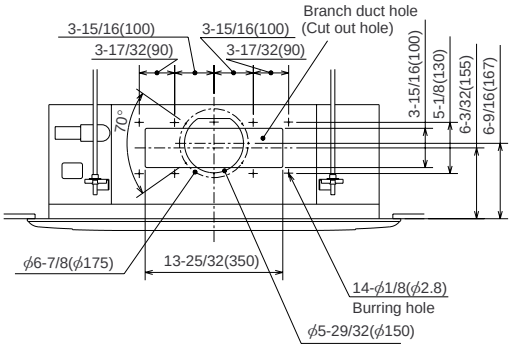

#### Taking air into the unit

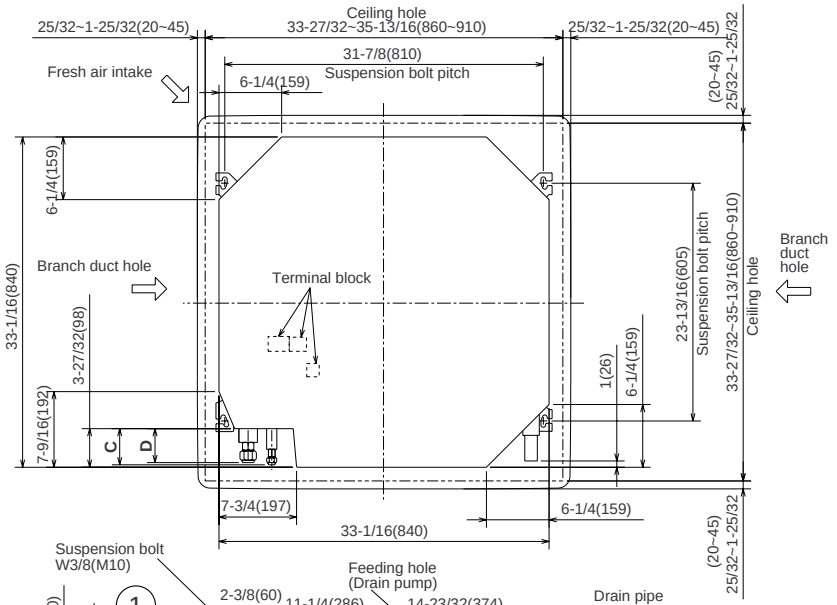


# 5 OUTLINES AND DIMENSIONS

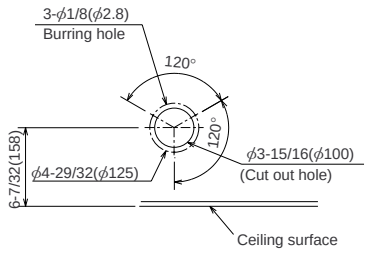
**PLFY-12NAMU-A PLFY-32NAMU-A**
**PLFY-20NAMU-A PLFY-40NAMU-A**
**PLFY-24NAMU-A**

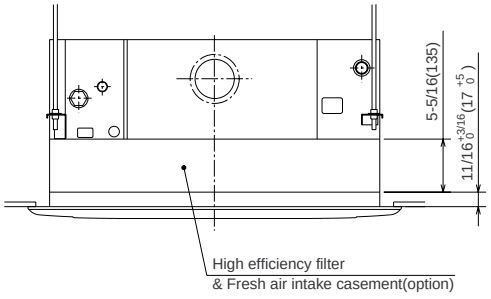
**Unit : in(mm)**

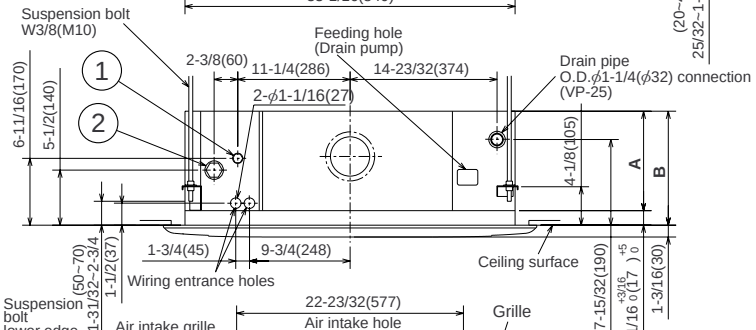


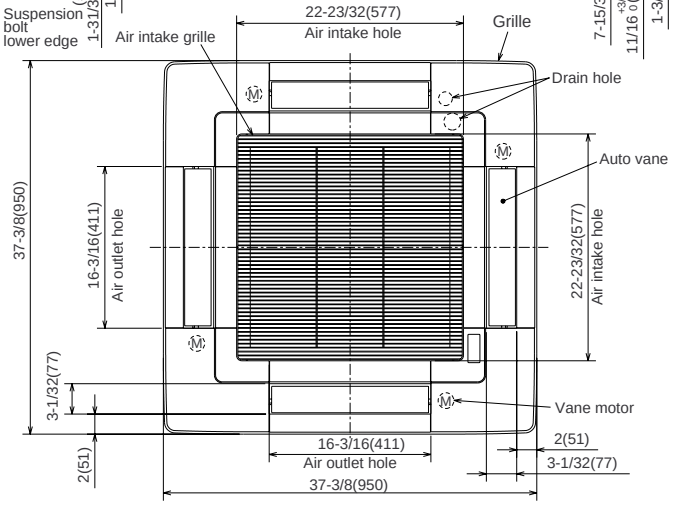




Detail drawing of fresh air intake



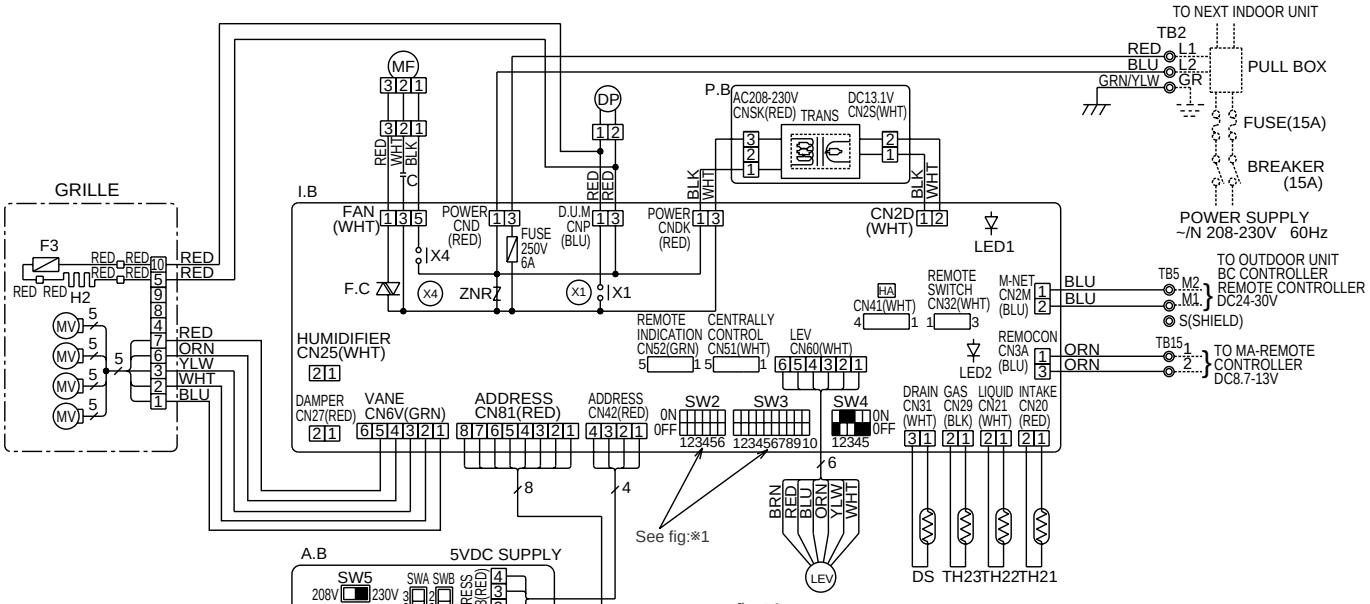




Unit : inch (mm)

| Models | ① | ② | A | B | C | D |
|---|---|---|---|---|---|---|
| PLFY-12NAMU-A | Refrigerant pipe O.D.ϕ1/4(ϕ6.35) flared connection 1/4F | Refrigerant pipe O.D.ϕ1/2(ϕ12.7) flared connection 1/2F | 9-1/2 (241) | 10-3/16 (258) | 3-11/32 (85) | 3 (76) |
| PLFY-20,24NAMU-A | Refrigerant pipe O.D.ϕ3/8(ϕ9.52) flared connection 3/8F | Refrigerant pipe O.D.ϕ5/8(ϕ15.88) flared connection 5/8F | | | 3-1/2 (89) | 3-5/32 (80) |
| PLFY-32NAMU-A | | | 11-1/16 (281) | 11-3/4 (298) | | |
| PLFY-40NAMU-A | | Refrigerant pipe O.D.ϕ3/4(ϕ19.05) flared connection 3/4F | | | | 3-5/16 (84) |

# 6 WIRING DIAGRAM

**PLFY-12NAMU-A PLFY-32NAMU-A**
**PLFY-20NAMU-A PLFY-40NAMU-A**
**PLFY-24NAMU-A**




<fig:※1>

| MODELS | SW2 | SW3 |
|---|---|---|
| PLFY-12NAMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 |
| PLFY-20NAMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 |
| PLFY-24NAMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 |
| PLFY-32NAMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 |
| PLFY-40NAMU-A | ON OFF 1 2 3 4 5 6 | ON OFF 1 2 3 4 5 6 7 8 9 10 |

Notes:

1. At servicing for outdoor unit,always follow the wiring diagram of outdoor unit.
2. In case of using MA-Remote controller, please connect to TB15. (Remote controller wire is non-polar.)
3. In case of using M-NET, please connect to TB5. (Transmisson line is non-polar.)
4. Symbol [S] of TB5 is the shield wire connection.
5. Symbols used in wiring diagram above are, ◎:terminal block, □□□:connecter.
6. The setting of the SW2 dip switches differs in the capacity for the detail,refer to the fig:※1.
7. Please set the switch SW5 according to the power supply voltage. Set SW5 to 230V side when the power supply is 230 volts. When the power supply is 208 volts,set SW5 to 208V side.

LED on indoor board for service

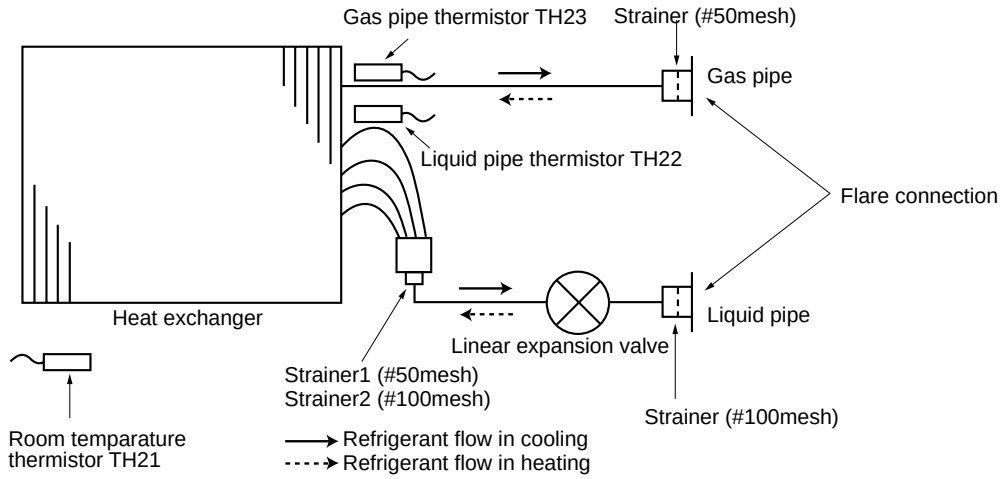
| Mark | Meaning | Function |
|---|---|---|
| LED1 | Main power supply | Main power supply(Indoor unit:208-230V) power on ⟶ lamp is lit |
| LED2 | Power supply for MA-Remote controller | Power supply for MA-Remote controller on ⟶ lamp is lit |

[LEGEND]

| SYMBOL | NAME | | SYMBOL | NAME | |
|---|---|---|---|---|---|
| A.B | CIRCUIT BOARD(ADDRESS) | | C | CAPACITOR (FAN MOTOR) | |
| SW1 | SWITCH | MODE SELECTION | DP | DRAIN WATER LIFTING-UP MACHINE | |
| SW5 | | VOLTAGE SELECTION | DS | DRAIN SENSER | |
| SW11 | | ADDRESS SETTING 1ST DIGIT | F3 | FUSE(0.16A/250V) | |
| SW12 | | ADDRESS SETTING 2ND DIGIT | H2 | DEW PREVENTION HEATER | |
| SW14 | | CONNECTION No. | LEV | LINEAR EXPANSION VALVE | |
| SWA | | CEILING HEIGHT SELECTOR | MF | FAN MOTOR (WITH INNER THERMOSTAT) | |
| SWB | | DISCHARGE OUTLET NUMBER SELECTOR | MV | VANE MOTOR | |
| SWC | | OPTION SELECTOR | TB2 | TERMINAL BLOCK | POWER SUPPLY |
| I.B | INDOOR CONTROLLER BOARD | | TB5 | | TRANSMISSION |
| CN25 | CONNECTOR | HUMIDIFIER | TB15 | | MA-REMOTE CONTROLLER |
| CN27 | | DAMPER | TH21 | THERMISTOR | ROOM TEMP. DETECTION (32°F/15kΩ, 77°F/5.4kΩ) |
| CN32 | | REMOTE SWITCH | | | |
| CN41 | | HA TERMINAL-A | TH22 | | PIPE TEMP. DETECTION/LIQUID (32°F/15kΩ, 77°F/5.4kΩ) |
| CN51 | | CENTRALLY CONTROL | | | |
| CN52 | | REMOTE INDICATION | TH23 | | PIPE TEMP. DETECTION/GAS (32°F/15kΩ, 77°F/5.4kΩ) |
| F.C | FAN PHASE CONTROL | | | | |
| FUSE | FUSE (6A/250V) | | | | |
| SW2 | SWITCH | CAPACITY CODE | | | |
| SW3 | | MODE SELECTION | | | |
| SW4 | | MODEL SELECTION | | | |
| X1 | AUX. RELAY | DRAIN PUMP | | | |
| X4 | | FAN MOTOR | | | |
| ZNR | VARISTOR | | | | |
| P.B | INDOOR POWER BOARD | | | | |

# 7 REFRIGERANT SYSTEM DIAGRAM

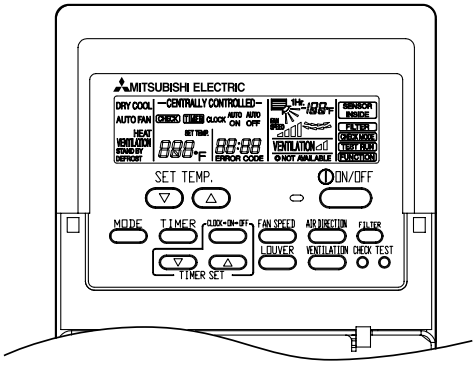
**PLFY-12NAMU-A PLFY-32NAMU-A**
**PLFY-20NAMU-A PLFY-40NAMU-A**
**PLFY-24NAMU-A**




| Item \ Service Ref. | PLFY-12NAMU-A | PLFY-20, 24, 32NAMU-A | PLFY-40NAMU-A |
|---|---|---|---|
| Gas pipe | 1/2" | 5/8" | 3/4" |
| Liquid pipe | 1/4" | 3/8" | 3/8" |

# 8 MICROPROCESSOR CONTROL

## INDOOR UNIT CONTROL
## 8-1. COOL operation



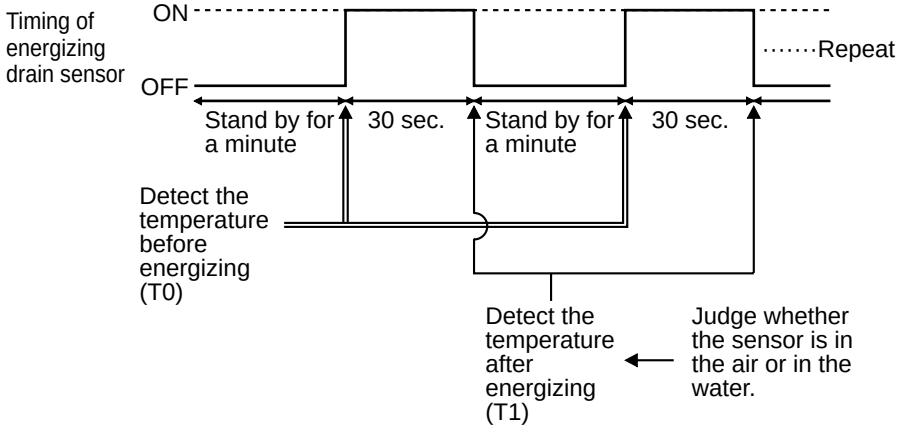
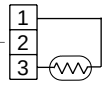

**<How to operate>**
① Press POWER ON/OFF button.
② Press the operation MODE button to display COOL.
③ Press the SET TEMP. button to set the desired temperature.
**NOTE**: The set temperature changes 2°F when the ▽ or △ button is pressed one time Cooling 67 to 87°F.

| Control modes | Control details | Remarks |
|---|---|---|
| 1. Thermoregulating function | 1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)<br>• Room temperature ≧ desired temperature + 2°F ⋯Thermo ON<br>• Room temperature ≦ desired temperature ⋯Thermo OFF | |
| | 1-2. Anti-freezing control<br>Detected condition : When the liquid pipe temp. (TH22) is 36°F or less in 16 minutes from compressors start up, anti-freezing control starts and the thermo OFF.<br>Released condition : The timer which prevents reactivating is set for 3 minutes, and anti- freezing control is cancelled when any one of the following conditions is satisfied.<br>① Liquid pipe temp. (TH22) turn 50°F or above.<br>② The condition of the thermo OFF has become complete by thermoregulating, etc.<br>③ The operation modes became mode other than COOL.<br>④ The operation stopped. | |
| 2. Fan | By the remote controller setting (switch of 4 speeds) | |

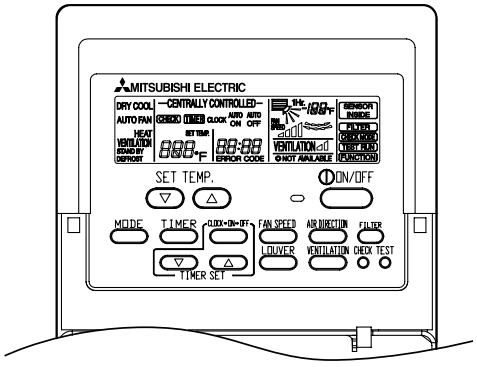
| Type | Fan speed notch |
|---|---|
| 4 speeds type | [Low], [Med2], [Med1], [High] |

**To be continued on the next page.**

**From the preceding page.**

| Control modes | Control details | Remarks |
|---|---|---|
| 3. Drain pump | 3-1. Drain pump control<br>•Always drain pump ON during the COOL and DRY mode operation. (Regardless of the thermo ON/ OFF)<br>•When the operation mode has changed from the COOL or DRY to the others (including Stop), OFF the control after the drain pump ON for 3 minutes. | |
| | **Drain sensor function**<br>• Energize drain sensor at a fixed voltage for a fixed duration. After energizing, compare the drain sensor's temperature to the one before energizing, and judge whether the sensor is in the air or in the water.<br><br>**Basic control system**<br>• While drain pump is turned on, repeat the following control system and judge whether the sensor is in the air or in the water.<br>  <br>•Drain sensor temperature rise (Δt)<br>•Temperature of drain sensor before current is applied ($T_0$)<br>•Temperature of drain sensor after current is applied ($T_1$)<br><br>[ $\Delta t = T_1 - T_0$ ] | ∗1 Drain sensor<br>Indoor control p.c. board<br>CN31<br>  |
| 4. Vane<br>(up/ down vane change) | (1) Initial setting : Start at COOL mode and horizontal vane.<br>(2) Vane position : Horizontal →Downward A →Downward B →Downward C→Swing<br>(3) Restriction of the downward vane setting<br>When setting the downward vane A, B or C in [Med1], [Med2] or [Low] of the fan speed notch, the vane changes to horizontal position after 1 hour have passed. | ∗1 "SET FOR 1 HOUR" appears on the wired remote controller. |

## 8-2. DRY operation

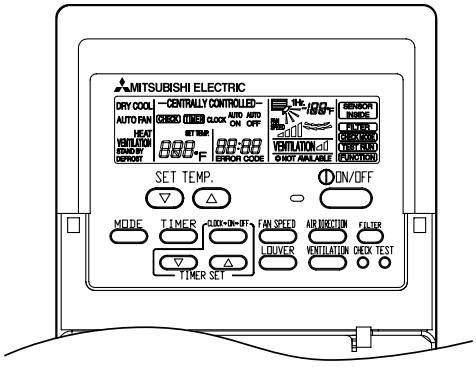



**<How to operate>**

① Press POWER ON/OFF button.
② Press the operation 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 ▽ or △ button is pressed one time. Dry 67 to 87°F.

<table>
<tr><th>Control modes</th><th>Control details</th><th>Remarks</th></tr>
<tr><td>1. Thermoregulating function</td><td>1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)<br>Setting the Dry thermo by the thermoregulating signal and the room temperature (TH1).<br>Dry thermo ON Room temperature ≧ desired temperature + 2°F<br>Dry thermo OFF Room temperature ≦ desired temperature
<table>
<tr><th rowspan="2">Room temperature</th><th colspan="2">3 min. passed since starting operation</th><th rowspan="2">Dry thermo ON time (min)</th><th rowspan="2">Dry thermo OFF time (min)</th></tr>
<tr><th>Thermoregulating signal</th><th>Room temperature (T1)</th></tr>
<tr><td rowspan="5">Over 64°F</td><td rowspan="4">ON</td><td>T1 ≧ 82°F</td><td>9</td><td>3</td></tr>
<tr><td>82°F > T1 ≧ 79°F</td><td>7</td><td>3</td></tr>
<tr><td>79°F > T1 ≧ 75°F</td><td>5</td><td>3</td></tr>
<tr><td>75°F > T1</td><td>3</td><td>3</td></tr>
<tr><td>OFF</td><td>Unconditional</td><td>3</td><td>10</td></tr>
<tr><td>Less than 64°F</td><td colspan="3">Dry thermo OFF</td></tr>
</table>
1-2. Frozen prevention control<br>No control function</td><td></td></tr>
<tr><td>2. Fan</td><td>Indoor fan operation controlled depends on the compressor conditions.
<table>
<tr><th>Dry thermo</th><th>Fan speed notch</th></tr>
<tr><td>ON</td><td>[Low]</td></tr>
<tr><td>OFF</td><td>Stop</td></tr>
</table>
Note: Remote controller setting is not acceptable.</td><td></td></tr>
<tr><td>3. Drain pump</td><td>Same control as COOL operation</td><td></td></tr>
<tr><td>4. Vane<br>(up/ down vane change)</td><td>Same control as COOL operation</td><td></td></tr>
</table>

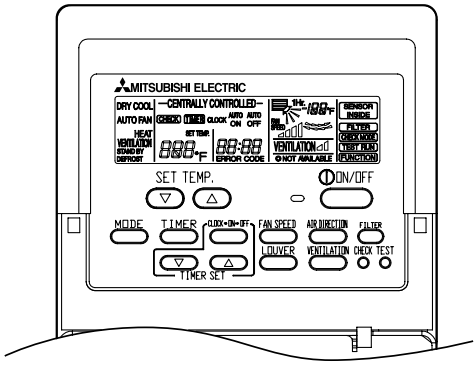
## 8-3. FAN operation




**<How to operate>**
① Press POWER ON/OFF button.
② Press the operation MODE button to display FAN.

| Control modes | Control details | Remarks |
|---|---|---|
| 1. Fan | Set by remote controller.<br>Type: 4 speeds type — Fan speed notch: [Low], [Med2], [Med1], [High] | |
| 2. Drain pump | 2-1. Drain pump control<br>The drain pump turns ON for the specified amount of time when any of the following conditions is met:<br>① ON for 3 minutes after the operation mode is switched from COOL or DRY to another operation mode (FAN).<br>② ON for 6 minutes after the drain sensor is determined to be submerged using the liquid level detection method given below.<br>③ ON for 6 minutes after indoor piping (liquid piping) temperature – indoor intake temperature ≦ -18°F, AND the drain sensor input is at the short or open level.<br>(If condition ② or ③ is still being met after the drain pump has been turned ON for 6 minutes, the drain pump is kept ON for a further 6 minutes.) | |
| | 2-2. Liquid level detection method<br>The liquid level is detected by determining whether or not the drain sensor is submerged, based on the amount the temperature rises after self-heating the sensor. This process is performed if any of the following conditions is met:<br>① Drain pump is ON.<br>② Indoor piping (liquid piping) temperature – indoor intake temperature ≦ -18°F<br>③ Indoor piping (liquid piping) temperature or indoor intake temperature is at the short or open level temperature.<br>④ Every hour after the drain pump has been switched from ON to OFF. | |
| 3. Vane<br>(up/ down vane change) | Same as the control performed during the COOL operation, but with no restriction on the vane's downward blow setting. | |

## 8-4. HEAT operation



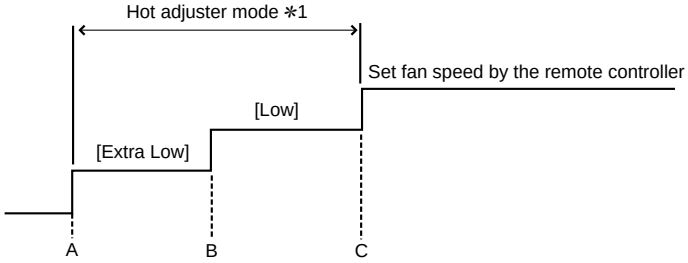

**<How to operate>**

① Press POWER ON/OFF button.
② Press the operation 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 ▽ or △ button is pressed one time. Heatling 63 to 83°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 unit the heated air begins to blow.

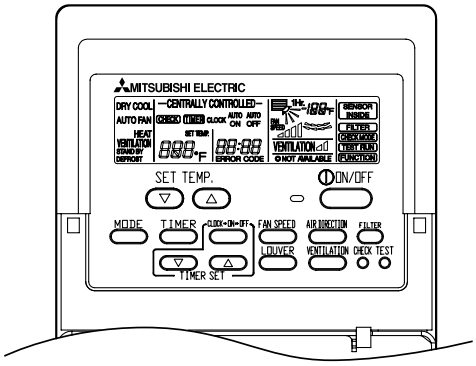
| Control modes | Control details | Remarks |
|---|---|---|
| 1. Thermoregulating function | 1-1. Thermoregulating function (Function to prevent restarting for 3 minutes)<br>• Room temperature ≦ desired temperature -2°F ⋯Thermo ON<br>• Room temperature ≧ desired temperature ⋯Thermo OFF | |
| 2. Fan | Controlled by the remote controller (4-speed)<br>Give priority to under-mentioned controlled mode<br>2-1. Hot adjuster mode<br>2-2. Preheating exclusion mode<br>2-3. Thermo OFF mode (When the compressor off by the thermoregulating)<br>2-4. Cool air prevention mode (Defrosting mode)<br>2-5. Capacity increasing mode | |
| | 2-1. Hot adjuster mode<br>The fan controller becomes the hot adjuster mode for the following conditions.<br>① When starting the HEAT operation<br>② When the thermoregulating function changes from OFF to ON.<br>③ When release the HEAT defrosting operation<br>  <br><br>A: HOT adjuster mode start<br>B: 5 min have passed since the condition A or the indoor liquid pipe temperature turned 65°F or more<br>C: 2 min have passed since the condition A (Terminating the hot adjuster mode) | ∗1 "STAND BY" will be displayed during the hot adjuster mode. |
| | 2-2. Preheating exclusion mode<br>When the condition changes the auxiliary heater ON to OFF (thermoregulating or operation stop, etc), the indoor fan operates in [Low] mode for 1 minute. | ∗1 This control is same for the model without auxiliary heater. |

**To be continued on the next page.**

**From the preceding page.**

| Control modes | Control details | Remarks |
|---|---|---|
| 2. Fan | 2-3. Thermo OFF mode<br>When the thermoregulating function changes to OFF, the indoor fan operates in [Extra low]. | |
| | 2-4. Heat defrosting mode<br>The indoor fan stops. | |
| 3. Drain pump | No drain pump operation<br>However, when the control changes from COOL or DRY operation, the drain pump operates for 3 minutes. | |
| 4. Vane control (Up/ down vane change) | (1) Initial setting : OFF → HEAT⋯[last setting]<br>When changing the mode from exception of HEAT to HEAT operation. ⋯[Downward C]<br>(2) Vane position :<br>Horizontal →Downward A →Downward B →Downward C→Swing<br>(3) Restriction of vane position<br>① The vane is horizontally fixed for the following modes.<br>(The control by the remote controller is temporally invalidated and control by the unit.)<br>•Thermo OFF<br>•Hot adjuster [Extra low] mode<br>•Heat defrost mode | |

## 8-5. AUTO operation [Automatic COOL/HEAT change over operation]




**<How to operate>**

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

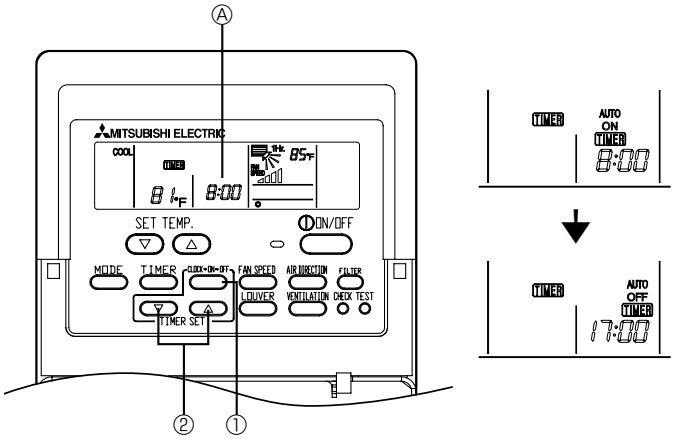
**NOTE**: The set temperature changes 2°F when the ▽ or △ button is pressed one time. Automatic 67 to 83°F.
"AUTO" works to change by itself the operation mode either to cooling or heating to the room temperature.

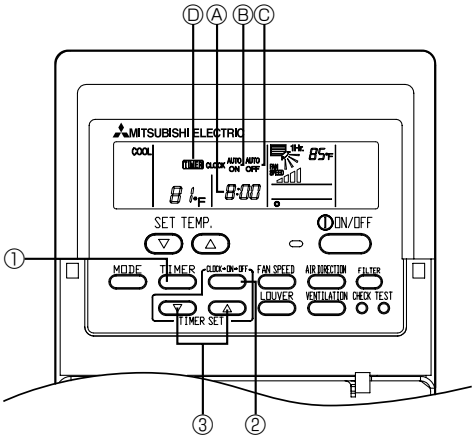
| Control modes | Control details | Remarks |
|---|---|---|
| 1. Initial value of operation mode | HEAT mode for room temperature < Desired temperature<br>COOL mode for room temperature ≧ Desired temperature | |
| 2. Mode change | (1) HEAT mode → COOL mode<br>Room temperature ≧ Desired temperature + 4°F. or 15 min. has passed<br>(2) COOL mode → HEAT mode<br>Room temperature ≦ Desired temperature - 4°F. or 15 min. has passed | |
| 3. COOL mode | Same control as cool operation | |
| 4. HEAT mode | Same control as heat operation | |

## 8-6. When unit is stopped Control mode

| Control modes | Control details | Remarks |
|---|---|---|
| 1. Drain pump | 1-1. Drain pump control<br>The drain pump turns ON for the specified amount of time when any of the following conditions is met (regardless of whether the compressor is ON or OFF)<br>① ON for 3 minutes after the operation mode is switched from COOL or DRY to another operation mode (HEAT mode).<br>② ON for 6 minutes after the drain sensor is determined to be submerged using the liquid level detection method given below.<br>③ ON for 6 minutes after indoor piping (liquid piping) temperature – indoor intake temperature ≦ -18°F, AND the drain sensor input is at the short or open level.<br>(If condition ② or ③ is still being met after the drain pump has been turned ON for 6 minutes, the drain pump is kept ON for a further 6 minutes.) | |
| | 1-2. Liquid level detection method<br>The liquid level is detected by determining whether or not the drain sensor is submerged, based on the amount the temperature rises after self-heating the sensor. This process is performed if any of the following conditions is met:<br>① Drain pump is ON.<br>② Indoor piping (liquid piping) temperature – indoor intake temperature ≦ -18°F (except during defrosting)<br>③ Indoor piping (liquid piping) temperature or indoor intake temperature is at the short or open level temperature.<br>④ Every hour after the drain pump has been switched from ON to OFF. | |

## 8-7. TIMER operation




### 1) Set the current time

① Press CLOCK-ON-OFF button to display the “current time” Ⓐ.

| | |
|---|---|
| Remote controller display Ⓐ | CLOCK ("current time") → TIMER ("timer start time") → TIMER ("timer end time") → No display |

② Each time you press ▽ button, the time increases in increments of one minute. Each time you press △ button, the time decreases in increments of one minute.

- Press and hold the button to rapidly change the time.
- The time changes in increments of one minute ➔ ten minutes ➔ in units of hour; in this order.
- Approximately ten seconds after pressing the button, the display on the remote controller will turn off.

The example shows a timer set for operation start at 8:00 and end at 17:00.

### 2) set the mode to continuous as follows

① Press TIMER button to display TIMER Ⓓ.

### 3) Set the time to start the unit as follows

② Press CLOCK-ON-OFF button to display Ⓑ ON.

③ Press ▽ △ (TIMER SET) button to set the time that you want the unit to start. The start time is displayed at Ⓐ.

### 4) Set the time to stop the unit as follows

② Press CLOCK-ON-OFF button to display Ⓒ OFF.

③ Press ▽ △ (TIMER SET) button to set the time that you want the unit to stop. The stop time is displayed at Ⓐ.

### 5) Set the mode to timer as follows

① Press TIMER button to display TIMER Ⓓ.

# 9 TROUBLE SHOOTING

## 9-1. How to check the parts PLFY-12, 20, 24, 32, 40NAMU-A

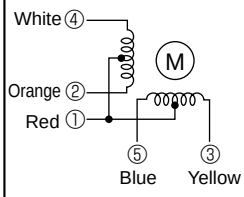
### Room temperature thermistor (TH21) / Liquid pipe thermistor (TH22) / Gas pipe thermistor (TH23)

Disconnect the connector then measure the resistance using a tester.
(Surrounding temperature 50°F~86°F)

| Normal | Abnormal |
|---|---|
| 4.3kΩ~9.6kΩ | Open or short |

(Refer to the next page for a detail.)

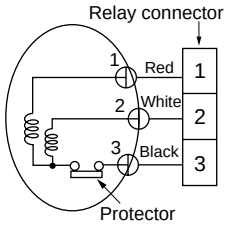
### Vane motor




Measure the resistance between the terminals using a tester.
(Surrounding temperature 68°F~86°F)

| Connector | Normal | Abnormal |
|---|---|---|
| Red — Yellow | 300Ω | Open or short |
| Red — Blue | | |
| Red — Orange | | |
| Red — White | | |

### Fan motor

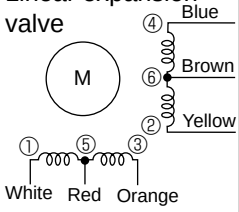



OPEN : 266±9°F
CLOSE : 176±36°F

Measure the resistance between the terminals using a tester.

| Motor terminal or Relay connector | Normal | | Abnormal |
|---|---|---|---|
| | PLFY-NAMU-A | | |
| | 12, 20, 24 | 32, 40 | |
| Red-Black | 87.2Ω | 32.6Ω | Open or short |
| White-Black | 104.1Ω | 40.7Ω | |

### Linear expansion valve

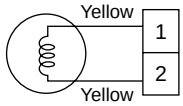



Disconnect the connector then measure the resistance valve using a tester.

| Normal | | | | Abnormal |
|---|---|---|---|---|
| ① - ⑤ White-Red | ② - ⑥ Yellow-Brown | ③ - ⑤ Orange-Red | ④ - ⑥ Blue-Brown | Open or short |
| 150Ω ±10% | | | | |

(Refer to the next page for a detail.)

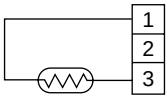
### Drain pump




Measure the resistance between the terminals using a tester.
(Surrounding temperature 68°F~86°F)

| Normal | Abnormal |
|---|---|
| 319Ω | Open or short |

### Drain sensor




Measure the resistance after 3 minutes have passed since the power supply was intercepted.
(Surrounding temperature 50°F~140°F)

| Normal | Abnormal |
|---|---|
| 0.6kΩ~6.0kΩ | Open or short |

(Refer to the next page for a detail.)

<Thermistor characteristic graph>

Thermistor for lower temperature

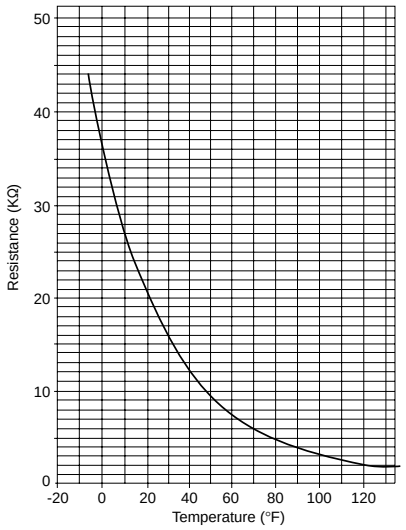
Room temperature thermistor(TH21)
Liquid pipe temperature thermistor(TH22)
Gas pipe temperature thermistor(TH23)

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

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

30°F 15.8kΩ
50°F 9.6kΩ
70°F 6.0kΩ
80°F 4.8kΩ
90°F 3.9kΩ
100°F 3.2kΩ

< Thermistor for lower temperature >



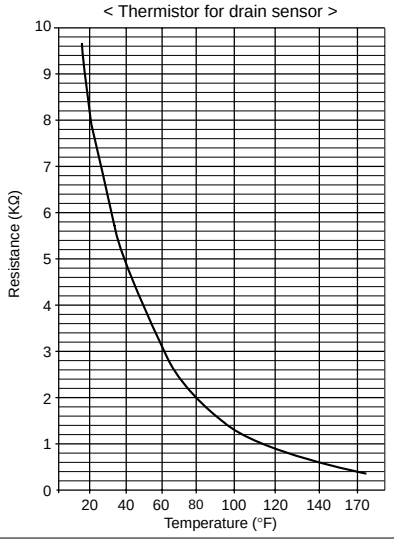

Thermistor for drain sensor

Thermistor $R_0$=6.0kΩ ±5%
Fixed number of B=3390kΩ ±2%

$$Rt=6\exp\{3390(\frac{1}{273+(t-32)/1.8}-\frac{1}{273})\}$$

30°F 6.3kΩ
50°F 3.9kΩ
70°F 2.5kΩ
80°F 2.0kΩ
90°F 1.6kΩ
100°F 1.3kΩ

< Thermistor for drain sensor >

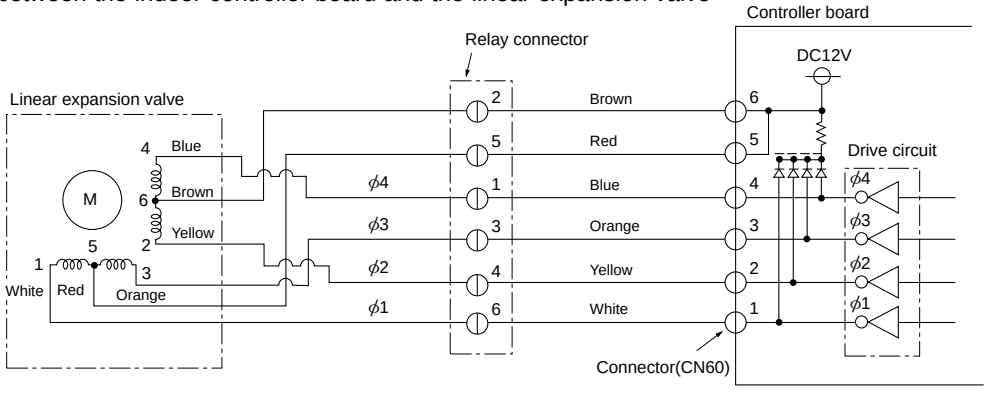



## Linear expansion valve

① **Operation summary of the linear expansion valve.**

• Linear expansion valve open/close through stepping motor after receiving the pulse signal from the indoor controller board.
• Valve position can be changed in proportion to the number of pulse signal.

<Connection between the indoor controller board and the linear expansion valve>




Note : Since the number of the connector at the controller board side and the relay connector are different, follow the color of the lead wire.

**<Output pulse signal and the valve operation>**

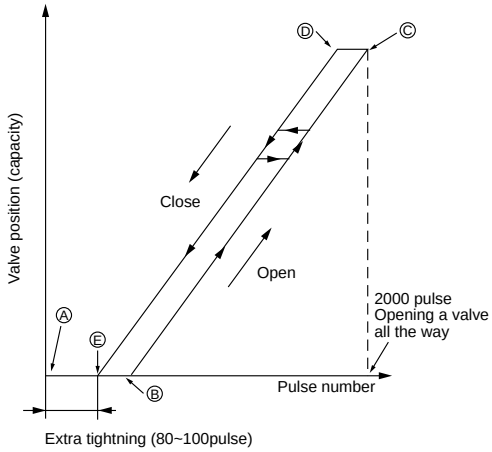
| Output (Phase) | Output | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| ϕ1 | ON | OFF | OFF | ON |
| ϕ2 | ON | ON | OFF | OFF |
| ϕ3 | OFF | ON | ON | OFF |
| ϕ4 | OFF | OFF | ON | ON |

Closing a valve : 1 → 2 → 3 → 4 → 1
Opening a valve : 4 → 3 → 2 → 1 → 4

The output pulse shifts in above order.

❋ 1. When linear expansion valve operation stops, all output phase become OFF.
2. At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will lock and vibrates.

② Linear expansion valve operation

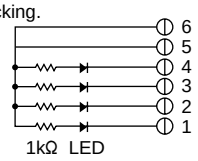
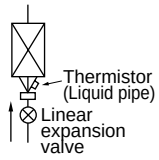



❋ When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to Ⓐ point in order to define the valve position.

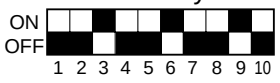
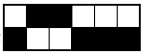
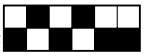
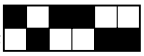
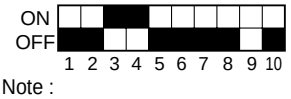
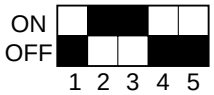
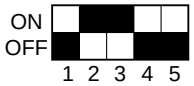
When the valve moves smoothly, there is no noise or vibration occurring from the linear expansion valve : however, when the pulse number moves from Ⓔ to Ⓐ or when the valve is locked, more noise can be heard than normal situation.

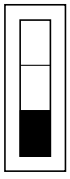
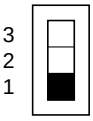
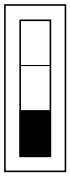
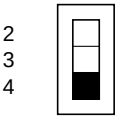
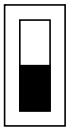
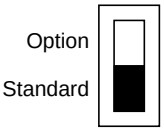
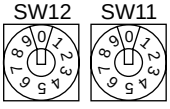
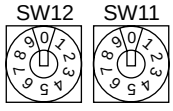
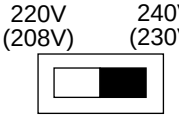
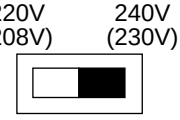
❋ Noise can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

③ Trouble shooting

| Symptom | Check points | Countermeasures |
|---|---|---|
| Operation circuit failure of the micro processor. | Disconnect the connector on the controller board, then connect LED for checking.<br>  <br><br>Pulse signal will be sent out for 10 seconds as soon as the main switch is turn on. If there is LED with lights on or lights off, it means the operation circuit is abnormal. | Exchange the indoor controller board at drive circuit failure. |
| Linear expansion valve mechanism is locked. | Motor will idle and make ticking noise when motor is operated while the linear expansion valve is locked. This ticking sound is the sign of the abnormality. | Exchange the linear expansion vale. |
| Short or breakage of the motor coil of the linear expansion valve. | Measure the resistance between the each coil (red-white, red-orange, brown-yellow, brown-blue) using a tester. It is normal if the resistance is in the range of 150Ω ± 10%. | Exchange the linear expansion valve. |
| Valve doesn't close completely (thermistor leaking). | To check the linear expansion valve, operate the indoor unit in fan mode and at the same time operate other indoor units in cooling mode, then check the pipe temperature <liquid pipe temperature> of the indoor unit by the outdoor multi controller board operation monitor. During fan operation, linear expansion valve is closed completely and if there are some leaking, detecting temperature of the thermistor will go lower. If the detected temperature is much lower than the temperature indicated in the remote controller, it means the valve is not closed all the way. It is not necessary to exchange the linear expansion valve, if the leakage is small and not making any trouble.<br>  <br> | If large amount of thermistor is leaked, exchange the linear expansion valve. |
| Wrong connection of the connector or contact failure. | Check the color of lead wire and missing terminal of the connector. | Disconnect the connector at the controller board, then check the continuity. |

## 9-2. FUNCTION OF DIP SWITCH

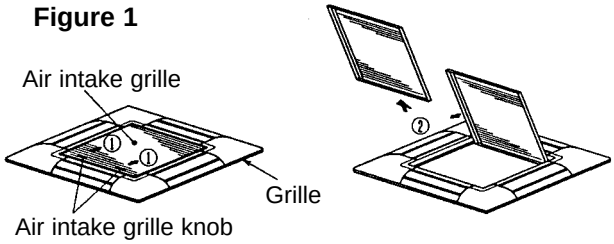
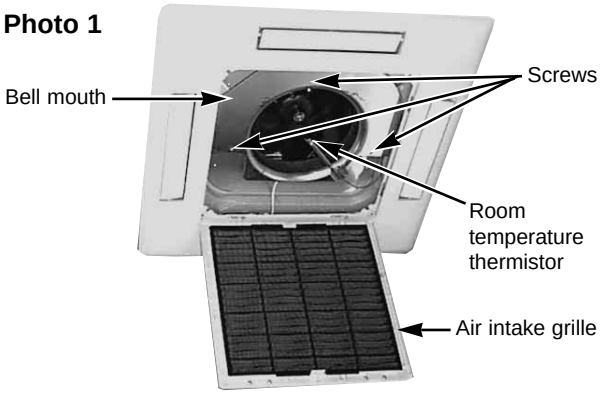
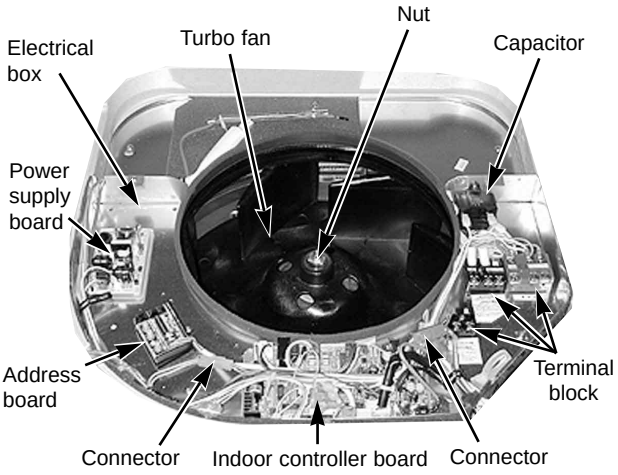
<table>
<tr><th rowspan="2">Switch</th><th rowspan="2">Pole</th><th rowspan="2">Function</th><th colspan="2">Operation by switch</th><th rowspan="2">Remarks</th></tr>
<tr><th>ON</th><th>OFF</th></tr>
<tr><td rowspan="10">SW1<br>Mode<br>Selection</td><td>1</td><td>Thermistor <intake temperature detection> position</td><td>Built-in remote controller</td><td>Indoor unit</td><td rowspan="10">Address board<br><br><At delivery><br>  <br><br><br>Note :<br>※1 Fan operation at Heating mode.<br>※2 Heater thermo ON is operating.<br>※3 SW 1-7=OFF, SW 1-8=ON → Setting air flow.<br>SW 1-7=ON, SW 1-8=ON → Indoor fan stop.</td></tr>
<tr><td>2</td><td>Filter clogging detection</td><td>Provided</td><td>Not provided</td></tr>
<tr><td>3</td><td>Filter cleaning</td><td>2,500hr</td><td>100hr</td></tr>
<tr><td>4</td><td>Fresh air intake</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>5</td><td>Remote indication switching</td><td>Thermostat ON signal indication</td><td>Fan output indication</td></tr>
<tr><td>6</td><td>Humidifier control</td><td>Always operated while the heat in ON ※1</td><td>Operated depends on the condition ※2</td></tr>
<tr><td>7</td><td rowspan="2">Air flow set in case of Heat thermostat OFF</td><td>Low ※3</td><td>Extra low ※3</td></tr>
<tr><td>8</td><td>Setting air flow ※3</td><td>Depends on SW1-7</td></tr>
<tr><td>9</td><td>Auto restart function</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>10</td><td>Power ON/OFF</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>SW2<br>Capacity code setting</td><td>1~6</td><td colspan="3"><table><tr><th>MODELS</th><th>SW 2</th><th>MODELS</th><th>SW 2</th></tr><tr><td>PLFY-12NAMU-A</td><td>  </td><td>PLFY-32NAMU-A</td><td>  </td></tr><tr><td>PLFY-20NAMU-A</td><td>  </td><td>PLFY-40NAMU-A</td><td>  </td></tr><tr><td>PLFY-24NAMU-A</td><td>  </td><td></td><td></td></tr></table></td><td>Indoor controller board<br><br>Set while the unit is off.<br><br><At delivery><br><br>Set for each capacity.</td></tr>
<tr><td rowspan="10">SW3<br>Function<br>Selection</td><td>1</td><td>Heat pump / Cooling only</td><td>Cooling only</td><td>Heat pump</td><td rowspan="10">Indoor controller board<br>Set while the unit is off.<br><At delivery><br>  <br><br>Note :<br>※4 At cooling mode, each angle can be used only1 hour.<br>※5 SW3-2 setting<br>Only for PLFY-NAM, SW is used to change whether the humidifier functions or not. (Fixed the louver function less.)<br>※6 SW3-9 setting<br>PLFY-12NAMU-A = ON<br>20NAMU-A = ON<br>24NAMU-A = OFF<br>32NAMU-A = ON<br>40NAMU-A = OFF</td></tr>
<tr><td>2</td><td>Louver / humidifier ※5</td><td>Available</td><td>Not available</td></tr>
<tr><td>3</td><td>Vane</td><td>Available</td><td>Not available</td></tr>
<tr><td>4</td><td>Vane swing function</td><td>Available</td><td>Not available</td></tr>
<tr><td>5</td><td>Vane horizontal angle</td><td>Second setting</td><td>First setting</td></tr>
<tr><td>6</td><td>Vane cooling limit angle setting ※4</td><td>Horizontal angle</td><td>Down B, C</td></tr>
<tr><td>7</td><td>Indoor linear expansion valve opening</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>8</td><td>Heat 4degrees up</td><td>Not effective</td><td>Effective</td></tr>
<tr><td>9</td><td>Superheat setting temperature ※6</td><td>5degrees</td><td>2degrees</td></tr>
<tr><td>10</td><td>Sub cool setting temperature</td><td>15degrees</td><td>10degrees</td></tr>
<tr><td>SW4<br>Unit<br>Selection</td><td>1~5</td><td colspan="3">  </td><td>Indoor controller board<br>Set while the unit is off.<br><At delivery><br>  </td></tr>
</table>

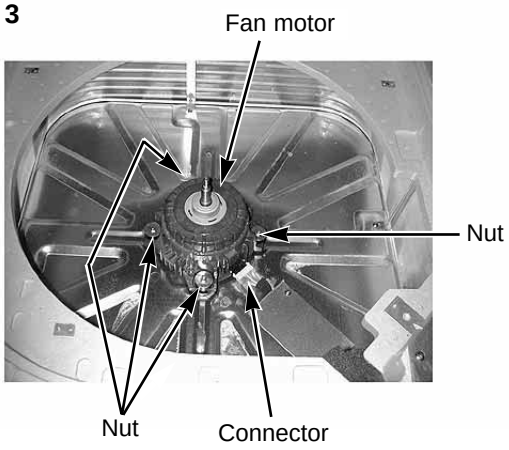
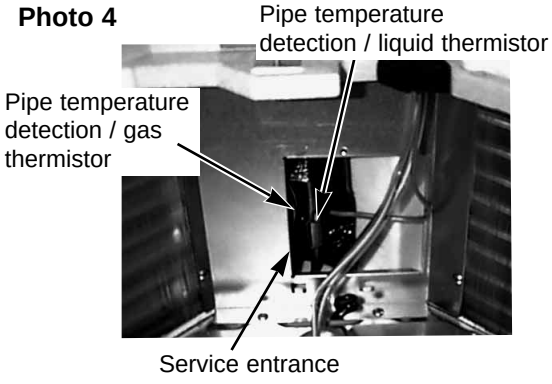
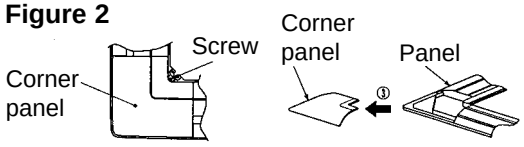
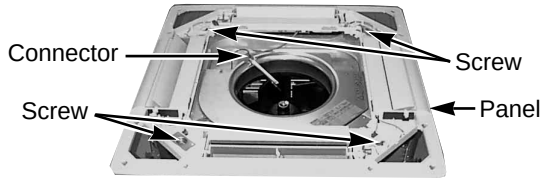
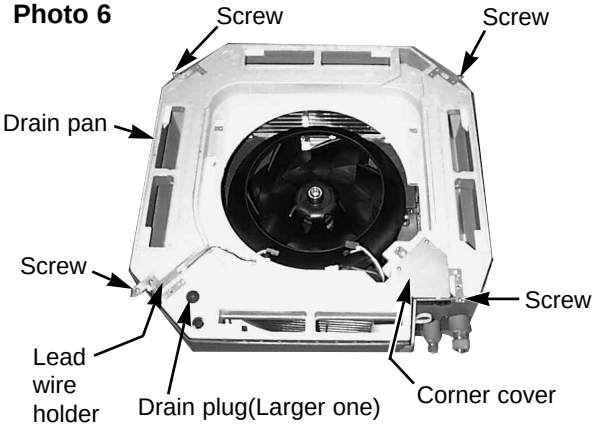
<table>
<tr><th>Switch</th><th>Pole</th><th>Operation by switch</th><th>Remarks</th></tr>
<tr><td>SWA<br>Ceiling height selector</td><td>1~3</td><td>(High ceiling②) 3<br>(High ceiling①) 2<br>(Standard) 1<br>  <br>✻ Ceiling height can be changed depends on SWB setting.<br>PLFY-12, 20, 24NAMU-A (Unit : feet)<table><tr><th colspan="2">SWA / SWB</th><th>1<br>Standard</th><th>2<br>High ceiling①</th><th>3<br>High ceiling②</th></tr><tr><td>4</td><td>4 direction</td><td>8.9</td><td>9.8</td><td>11.5</td></tr><tr><td>3</td><td>3 direction</td><td>9.8</td><td>10.8</td><td>11.5</td></tr><tr><td>2</td><td>2 direction</td><td>10.8</td><td>11.5</td><td>—</td></tr></table></td><td>Address board<br><At delivery><br>  </td></tr>
<tr><td>SWB<br>Discharge outlet number selector</td><td>3</td><td>(2 direction) 2<br>(3 direction) 3<br>(4 direction) 4<br>  <br>PLFY-32, 40NAMU-A (Unit : feet)<table><tr><th colspan="2">SWA / SWB</th><th>1<br>Standard</th><th>2<br>High ceiling①</th><th>3<br>High ceiling②</th></tr><tr><td>4</td><td>4 direction</td><td>10.5</td><td>11.8</td><td>13.8</td></tr><tr><td>3</td><td>3 direction</td><td>11.8</td><td>13.1</td><td>13.8</td></tr><tr><td>2</td><td>2 direction</td><td>13.1</td><td>13.8</td><td>—</td></tr></table></td><td>Address board<br><At delivery><br>  </td></tr>
<tr><td>SWC<br>Option selector</td><td>2</td><td>Option<br>Standard<br>  <br>When attach the optional high performance filter elements (multi function casement) to the unit, be sure to attach it to the option side in order to prevent the airflow reducing.</td><td>Address board<br><At delivery><br>  </td></tr>
<tr><td>SW11<br>1st digit address setting<br>SW12<br>2nd digit address setting</td><td>Rotary switch</td><td>  <br>Address setting should be done when M-NET Remote controller is being used.</td><td>Address board<br>Address can be set while the unit is stopped.<br><At delivery><br>  </td></tr>
<tr><td>SW14<br>Connection No. setting</td><td>Rotary switch</td><td>  <br>This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set.</td><td>Address board<br><At delivery><br>  </td></tr>
<tr><td>SW5<br>Voltage Selection</td><td>2</td><td>  <br>If the unit is used at the 230V area, set the voltage to 230V.<br>If the unit is used at the 208V, set the voltage to 208V.</td><td>Address board<br><At delivery><br>  </td></tr>
</table>

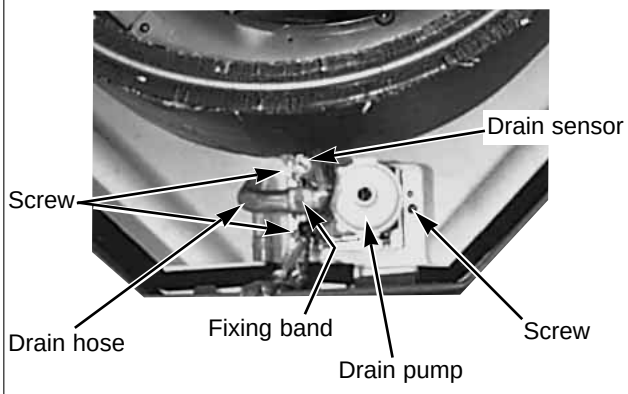
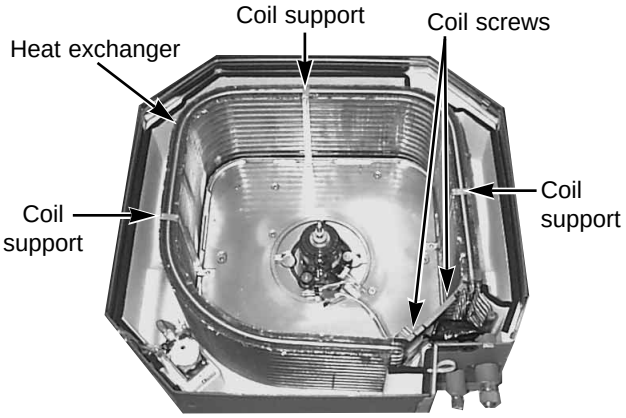
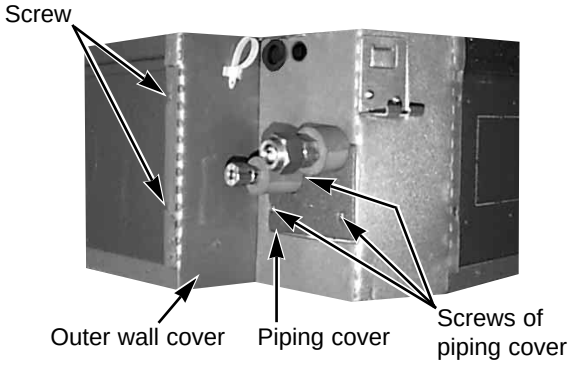
# 10 DISASSEMBLY PROCEDURE

**PLFY-20NAMU-A**

Be careful on removing heavy parts.

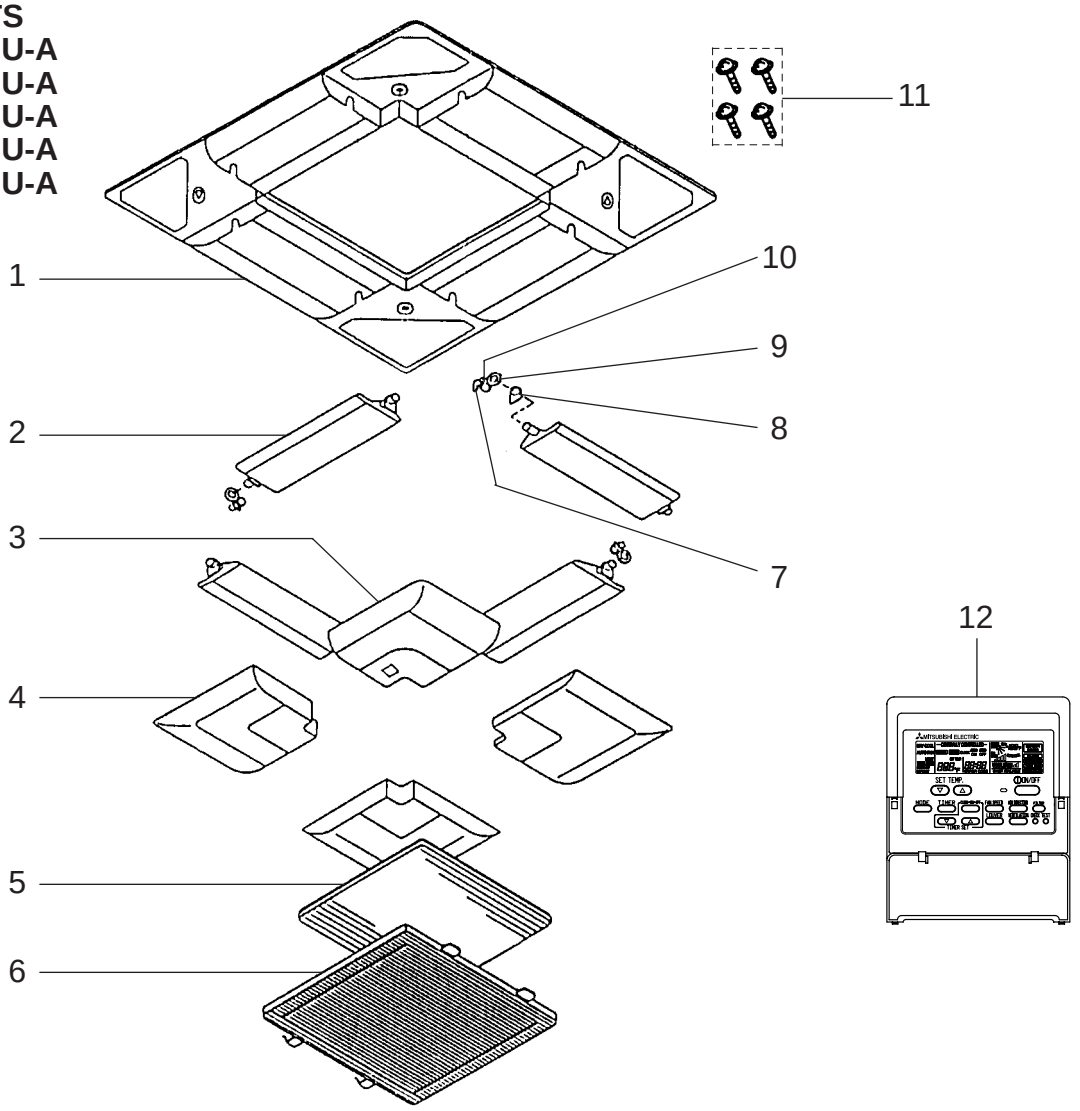
| OPERATING PROCEDURE | PHOTOS&ILLUSTRATIONS |
|---|---|
| **1. Removing the air intake grille**<br>(1) Slide the knob of air intake grille to the direction of the arrow ① to open the air intake grille.<br>(2) Remove the string hook from the panel to prevent the grille from dropping.<br>(3) Slide the shaft in the hinge to the direction of the arrow② and remove the air intake grille. | **Figure 1**<br>  <br> |
| **2. Removing the room temperature thermistor**<br>(1) Remove the screw(×1) in the room temperature thermistor holder to remove the holder and the room temperature thermistor.<br>(2) Remove the 1 screw from the bell mouth, and unscrew the another 2 screws (fixed to the oval hole which has different diameter) to remove the bell mouth.<br>(3) Hold the holder claw, and remove the room temperature thermistor and holder.<br>(4) Disconnect the connector (red) in the indoor control board. | **Photo 1**<br>  <br> |
| **3. Removing the electrical box**<br>(1) Disconnect the lead wire of the vane motor from the clamp, and disconnect the white connector (10P).<br>(2) Remove the room temperature thermistor with the holder.<br>(3) Remove the bell mouth.(See photo 1)<br>(4) Disconnect the relay connector in the electrical box.<br>Red (3P) for fan motor power supply<br>White (2P) for pipe temperature detection / liquid thermistor<br>Black (2P) for pipe temperature detection / gas thermistor<br>Blue (2P) for drain pump<br>White (3P) for drain sensor<br>(5) Remove the 3 screws from the electrical box, loosen another 2 screws to remove the box.<br><Electrical parts in the electrical box><br>Indoor controller board<br>power supply board<br>Terminal block (Power supply)<br>Terminal block (Transmission)<br>Terminal block (MA remote controller)<br>Capacitor<br>Address board | **Photo 2**<br>  <br> |

| OPERATING PROCEDURE | PHOTOS&ILLUSTRATIONS |
|---|---|
| **4. Remove the fan motor**<br>(1) Remove the bell mouth.(See photo 1)<br>(2) Remove the electrical box.(See photo 2)<br>(3) Remove the turbo fan nut, washer and radiation cap(P100, P125).<br>(4) Pull out the turbo fan.<br>(5) Disconnect the connector of the fan motor lead wire.<br>(6) Remove the 4 nuts of the fan motor. | **Photo 3**<br>  <br> |
| **5. Removing the pipe temperature detection / liquid thermistor and the pipe temperature detection / gas thermistor**<br>(1) Remove the bell mouth.(See photo 1)<br>(2) Remove the electrical box.(See photo 2)<br>(3) Remove the turbo fan.<br>(4) Remove the screw of the service panel.<br>(5) Remove the service panel.<br>(6) Remove the pipe temperature detection / liquid thermistor and the pipe temperature detection / gas thermistor which is inserted into the holder installed to the thin copper pipe.<br>(7) Disconnect the each 2-pin white(liquid) and black(gas) connector. | **Photo 4**<br>  <br> |
| **6. Removing the panel**<br>(1) Remove the air intake grille.(See figure 1)<br>**Corner panel (See figure 2)**<br>(1) Remove the screw of the corner.<br>(2) Slide the corner panel to the direction of the arrow③, and remove the corner panel.<br>**Panel (See photo 6)**<br>(1) Disconnect the connector that connects with the unit.<br>(2) Remove the 2 screws from the panel and loose another 2 screws, which fixed to the oval hole, have different diameter.<br>(3) Rotate the panel a little to remove the screws.(Slide the panel so that the screw comes to a large diameter of the oval hole, which has two different diameters.) | **Figure 2**<br>  <br><br>**Photo 5**<br>  <br> |
| **7. Removing the drain pan**<br>(1) Remove the panel. (See photo 5)<br>(2) Remove the drain plug (Larger one), drain the remaining water in the drain pan.<br>(3) Remove the corner cover. (2 screws)<br>(4) Remove the bell mouth (See photo 1)<br>(5) Remove the electrical box. (See photo 2)<br>(6) Remove the lead wire holder. (1 screw)<br>(7) Remove the 4 screws and pull out the drain pan.<br>※ Pull out the left and right of the pan gradually. Be careful not to crack or damage the pan. | **Photo 6**<br>  <br> |

| OPERATING PROCEDURE | PHOTOS&ILLUSTRATIONS |
|---|---|
| **8. Removing the drain pump and drain sensor**<br>(1) Remove the panel. (See photo 5)<br>(2) Remove the bell mouth. (See photo 1)<br>(3) Remove the electrical box. (See photo 2)<br>(4) Remove the drain pan. (See photo 6)<br>(5) Remove the 3 screws of the drain pump.<br>(6) Cut the drain hose band, pull out the drain hose from the drain pump.<br>(7) Pull out the drain pump.<br>(8) Remove the drain sensor and the holder. | **Photo 7**<br>  <br> |
| **9. Removing the heat exchanger**<br>(1) Remove the panel. (See photo 5)<br>(2) Remove the bell mouth. (See photo 1)<br>(3) Remove the electrical box. (See photo 2)<br>(4) Remove the drain pan. (See photo 6)<br>(5) Remove the turbo fan. (See photo 3)<br>(6) Remove the 3 screws of the piping cover, and pull out piping cover.<br>(7) Remove the 4 screws of the outer wall cover, and pull out the outer wall cover.<br>(8) Remove the screw of the coil support.<br>(9) Remove the 2 screws of the coil.<br>(10) Pull out the heat exchanger. | **Photo 8**<br>  <br><br>**Photo 9**<br>  <br> |

# 11 PARTS LIST

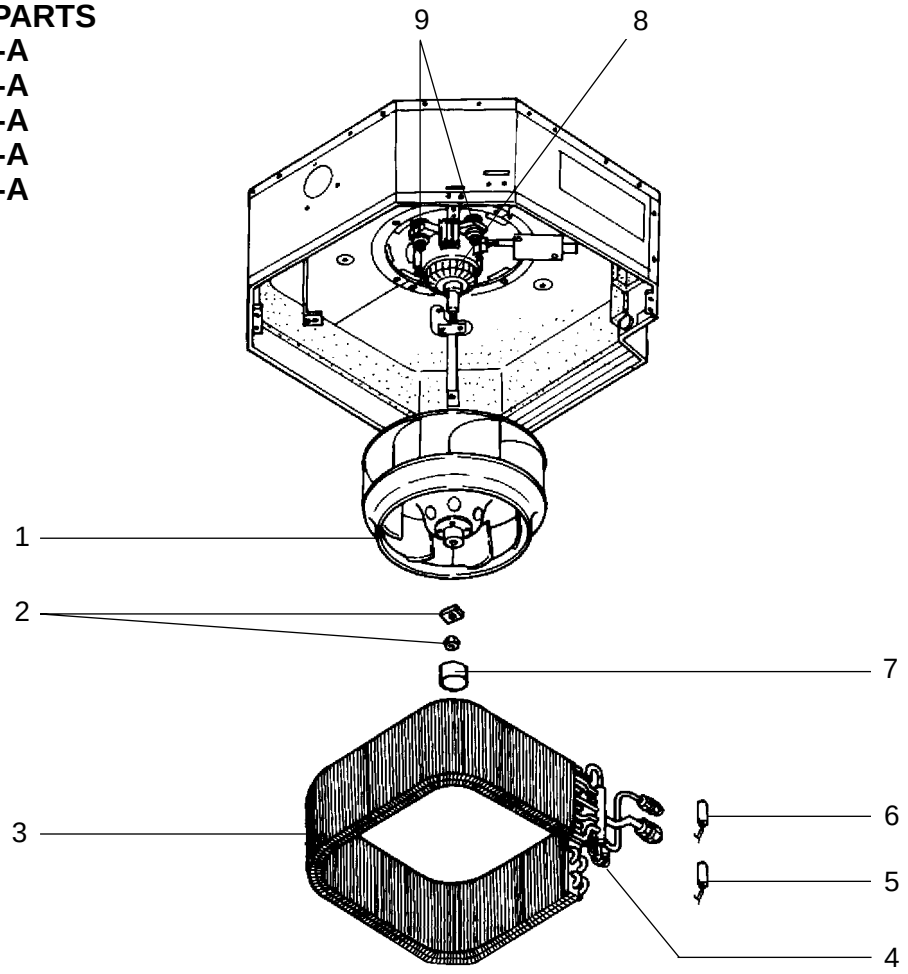
**PANEL PARTS**
**PLFY-12NAMU-A**
**PLFY-20NAMU-A**
**PLFY-24NAMU-A**
**PLFY-32NAMU-A**
**PLFY-40NAMU-A**




| No. | Part No. | Part Name | Specification | Q'ty/set PLFY-12, 20, 24, 32, 40 NAMU-A | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price Unit | Price Amount |
|---|---|---|---|---|---|---|---|---|---|
| 1 | T7W E12 003 | AIR OUTLET GRILLE | PLP-40AAU | 1 | | | | | |
| 2 | T7W E05 002 | AUTO VANE | | 4 | | | | | |
| 3 | T7W E01 638 | CORNER PANEL | | 1 | | | | | |
| 4 | R01 E00 638 | CORNER PANEL | | 3 | | | | | |
| 5 | R01 E00 500 | AIR FILTER | | 1 | | | | | |
| 6 | R01 E00 691 | GRILLE ASSY | | 1 | | | | | |
| 7 | R01 E00 223 | VANE MOTOR | | 4 | | MV | | | |
| 8 | R01 E00 063 | VANE BUSH | | 8 | | | | | |
| 9 | R01 E00 040 | GEAR (VANE) | | 4 | | | | | |
| 10 | R01 E01 040 | GEAR (MOTOR) | | 4 | | | | | |
| 11 | T7W E00 673 | SCREW ASSY | | 1 | | | | | |
| 12 | — | REMOTE CONTROLLER | PAR-20MAU | 1 | | R.B | | | |

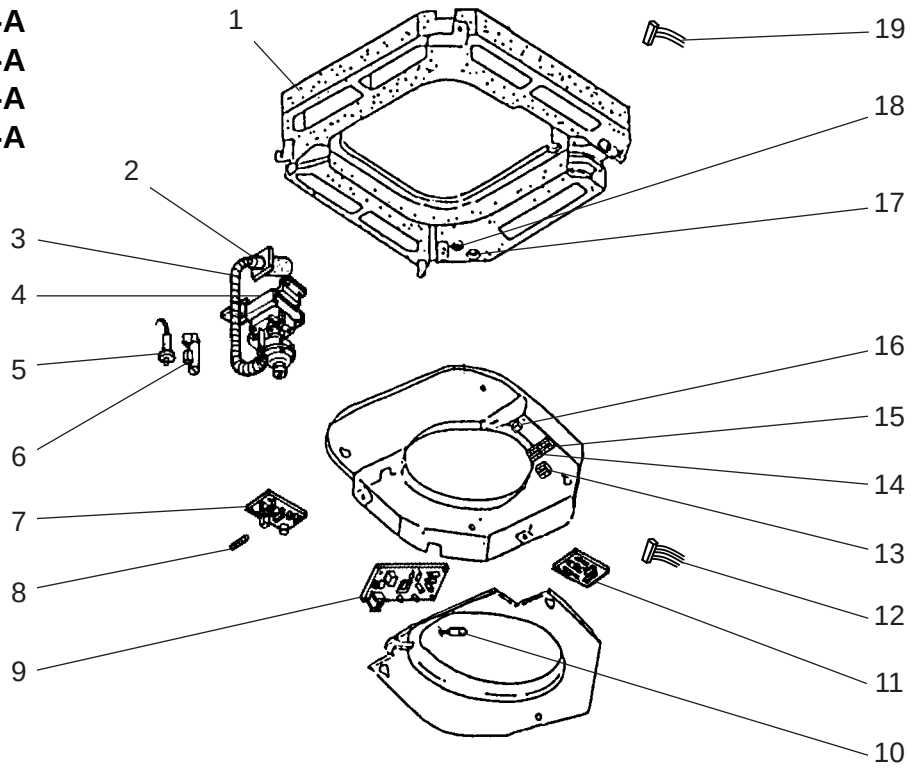
**This REMOTE CONTROLLER is made by AIR-CONDITIONING & REFRIGERATION SYSTEMS WORKS,. MITSUBISHI ELECTRIC CORPORATION.**

**FUNCTIONAL PARTS**
**PLFY-12NAMU-A**
**PLFY-20NAMU-A**
**PLFY-24NAMU-A**
**PLFY-32NAMU-A**
**PLFY-40NAMU-A**




| No. | Part No. | Part Name | Specification | Q'ty/set PLFY-・NAMU-A | | | | | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 12 | 20 | 24 | 32 | 40 | | | | Unit | Amount |
| 1 | R01 E10 114 | TURBO FAN | | 1 | 1 | 1 | | | | | | | |
| | R01 E11 114 | TURBO FAN | | | | | 1 | 1 | | | | | |
| 2 | R01 08K 097 | SPL WASHER | | 1 | 1 | 1 | 1 | 1 | | | | | |
| 3 | T7W E92 480 | HEAT EXCHANGER | | 1 | | | | | | | | | |
| | T7W E93 480 | HEAT EXCHANGER | | | 1 | | | | | | | | |
| | T7W E94 480 | HEAT EXCHANGER | | | | 1 | | | | | | | |
| | T7W E95 480 | HEAT EXCHANGER | | | | | 1 | | | | | | |
| | T7W E96 480 | HEAT EXCHANGER | | | | | | 1 | | | | | |
| 4 | T7W E11 401 | LINEAR EXPANSION VALVE | | 1 | 1 | 1 | | | | LEV | | | |
| | R01 E32 401 | LINEAR EXPANSION VALVE | | | | | 1 | 1 | | LEV | | | |
| 5 | T7W E06 202 | PIPE TEMPERATURE THERMISTOR | GAS | 1 | 1 | 1 | 1 | 1 | | TH23 | | | |
| 6 | R01 E00 202 | PIPE TEMPERATURE THERMISTOR | LIQUID | 1 | 1 | 1 | 1 | 1 | | TH22 | | | |
| 7 | R01 E00 122 | MOTOR CAP | | | | | 1 | 1 | | | | | |
| 8 | T7W E12 762 | FAN MOTOR | (D17D6P70MS) | 1 | 1 | 1 | | | | MF | | | |
| | T7W E08 762 | FAN MOTOR | (D176P110MS) | | | | 1 | 1 | | MF | | | |
| 9 | R01 A41 105 | MOTOR MOUNT | | 4 | 4 | 4 | 4 | 4 | | | | | |

## FUNCTIONAL PARTS
## PLFY-12NAMU-A
## PLFY-20NAMU-A
## PLFY-24NAMU-A
## PLFY-32NAMU-A
## PLFY-40NAMU-A




| No. | Part No. | Part Name | Specification | Q'ty/set PLFY-·NAMU-A | | | | | Remarks (Drawing No.) | Wiring Diagram Symbol | Recommended Q'ty | Price | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 12 | 20 | 24 | 32 | 40 | | | | Unit | Amount |
| 1 | T7W E09 529 | DRAIN PAN | | 1 | | | | | | | | | |
| | T7W E06 529 | DRAIN PAN | | | 1 | 1 | | | | | | | |
| | T7W E07 529 | DRAIN PAN | | | | | 1 | 1 | | | | | |
| 2 | R01 29H 523 | DRAIN SOCKET | | 1 | 1 | 1 | 1 | 1 | | | | | |
| 3 | T7W E00 527 | DRAIN HOSE | | 1 | 1 | 1 | 1 | 1 | | | | | |
| 4 | T7W E06 355 | DRAIN PUMP | | 1 | 1 | 1 | 1 | 1 | | DP | | | |
| 5 | R01 E00 266 | DRAIN SENSOR | | 1 | 1 | 1 | 1 | 1 | | DS | | | |
| 6 | R01 31K 241 | SENSOR HOLDER | | 1 | 1 | 1 | 1 | 1 | | | | | |
| 7 | R01 E02 313 | POWER BOARD | | 1 | 1 | 1 | 1 | 1 | | P.B | | | |
| 8 | T7W 410 239 | FUSE | 250V 6A | 1 | 1 | 1 | 1 | 1 | | FUSE | | | |
| 9 | T7W E28 310 | CONTROLLER BOARD | | 1 | 1 | 1 | 1 | 1 | | I.B | | | |
| 10 | R01 E58 202 | ROOM TEMPERATURE THERMISTOR | | 1 | 1 | 1 | 1 | 1 | | TH21 | | | |
| 11 | T7W E00 294 | ADDRESS BOARD | | 1 | 1 | 1 | 1 | 1 | | A.B | | | |
| 12 | T7W E00 304 | ADDRESS CABLE | | 1 | 1 | 1 | 1 | 1 | | | | | |
| 13 | R01 556 716 | TERMINAL BLOCK | 2P(1,2) | 1 | 1 | 1 | 1 | 1 | | TB15 | | | |
| 14 | T7W E17 716 | TERMINAL BLOCK | 3P(M1,M2,S) | 1 | 1 | 1 | 1 | 1 | | TB5 | | | |
| 15 | T7W E11 716 | TERMINAL BLOCK | 3P(L1,L2,GR) | 1 | 1 | 1 | 1 | 1 | | TB2 | | | |
| 16 | T7W E10 255 | CAPACITOR | 3.0μF 440V | 1 | 1 | 1 | | | | C | | | |
| | T7W E02 255 | CAPACITOR | 7.0μF 440V | | | | 1 | 1 | | C | | | |
| 17 | R01 A41 524 | DRAIN PLUG | | 1 | 1 | 1 | 1 | 1 | | | | | |
| 18 | R01 A48 524 | DRAIN PLUG | | 1 | 1 | 1 | 1 | 1 | | | | | |
| 19 | T7W E01 304 | LEAD ASSY (F/M) | | 1 | 1 | 1 | 1 | 1 | | | | | |

# 12 OPTIONAL PARTS

### 12-1. Multi function casement

| | |
|---|---|
| Part No. | PAC-SG03TM-E |

### 12-2. Air outlet shutter plate (20 sets)

| | |
|---|---|
| Part No. | PAC-SG06SP-E |

### 12-3. High efficiency filter (PAC-SG03TM-E is required in using this optional part.)

| | |
|---|---|
| Part No. | PAC-SG01KF |

# CITY MULTI

MITSUBISHI ELECTRIC CORPORATION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