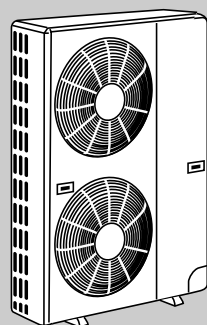


TECHNICAL & SERVICE MANUAL

<Outdoor unit>

Models

PU12EK
PU18EK **PU18EK₁**
PU24EK **PU24EK₁** **PU24EK₂** **PU24EK₃**
PU30EK **PU30EK₁** **PU30EK₂** **PU30EK₃**
PU36EK **PU36EK₁** **PU36EK₂** **PU36EK₃**
PU42EK2 **PU42EK2₁**
PU42EK7 **PU42EK7₁** **PU42EK7₂**



Outdoor unit

Model name
indication

Revision:

- Wiring diagram for PU12EK has been modified in "8. WIRING DIAGRAM".
- Transformer and outdoor controller board for PU12EK has been modified in "13. PARTS LIST".

Note:

- Refer to other manual as for Indoor Units.

- Please void OC247 REVISED EDITION-D.

CONTENTS

1. FEATURES	2
2. TECHNICAL CHANGE	3
3. COMBINATION OF INDOOR AND OUTDOOR UNITS	4
4. PART NAMES AND FUNCTIONS	4
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7. OUTLINES AND DIMENSIONS	9
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9. REFRIGERANT SYSTEM DIAGRAM	18
10. MICROPROCESSOR CONTROL	19
11. TROUBLESHOOTING	21
12. DISASSEMBLY INSTRUCTIONS	25
13. PARTS LIST	29

Correction:

" 13. PARTS LIST " has been modified on page 33 and 43.

Page	Revise point	Model	Incorrect	Correct
33	FUNCTIONAL PARTS No.12 CAPILLARY TUBE	PU12EK	T7W 588 425	T7W E07 425
	FUNCTIONAL PARTS No.17 TRANSFORMER		T7W 850 799	T7W A30 799
	FUNCTIONAL PARTS No.20 OUTDOOR CONTROLLER BOARD		T7W 850 315	T7W E08 315
43	FUNCTIONAL PARTS No.1 FAN MOTOR	PU42EK7 PU42EK7 ₁ PU42EK7 ₂	T7W A05 763	T7W 853 763

1

FEATURES

1. REDI-CHARGED REFRIGERANT SYSTEM

The industry's first redi-charged refrigerant system.

There is no need to adjust the amount of refrigerant to match the piping length on-site unless lines exceed 100ft.

You will see a major reduction in installation time and labor costs.

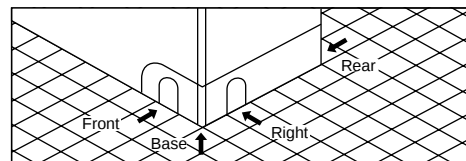
2. HIGH RELIABILITY AND EASY SERVICING

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.

3. FOUR-WAY PIPING ACCESS MAKES INSTALLATION LAYOUT EASY

Piping on the outdoor unit may be connected from either of four directions: front, rear, side or beneath the base.

This easy-access design makes it possible to install a number of units in a compact arrangement at a single site. The outdoor unit allows for unheard-of flexibility in determining a piping layout, thus greatly simplifying installation.



4. FRONT-ACCESS FACILITATES MAINTENANCE

The outdoor unit has been designed with a front-access service panel that allows easy access to all maintenance point, regardless of the installation layout. What's more, this front panel may be removed by loosening only two screws. It all adds up to greatly simplified maintenance work.

(OC247 REVISED EDITION-A)

Change of the service parts.

Refer to "13. PARTS LIST" for the details.

PU18EK → PU18EK₁

PU24EK → PU24EK₁

PU30EK → PU30EK₁

PU36EK → PU36EK₁

PU42EK2 → PU42EK2₁

1. OUTDOOR CONTROLLER BOARD has been changed.

2. TRANSFORMER has been changed.

PU18EK → PU18EK₁

- CONTACTOR has been changed.

(OC247 REVISED EDITION-B)

PU24EK₁ → PU24EK₂

PU30EK₁ → PU30EK₂

PU36EK₁ → PU36EK₂

- COMPRESSOR has been changed.

(PU24EK model) NH33NBD → NH33NBDT

(PU30EK model) NH41NAD → NH41NAHT

(PU36EK model) NH47NAD → NH47NAHT

Refer to "5. SPECIFICATIONS", "6. DATA" and "13. PARTS LIST" for details.

PU42EK7 → PU42EK7₁

1. COMPRESSOR CONTACTOR has been changed to the one equipped THERMAL RELAY.

Refer to 8.WIRING DIAGRAM and 13.PARTS LIST for details.

2. OUTDOOR CONTROLLER BOARD has been changed.

Refer to "13. PARTS LIST" for details.

(OC247 REVISED EDITION-D)

PU24EK₂ → PU24EK₃

PU30EK₂ → PU30EK₃

PU36EK₂ → PU36EK₃

PU42EK7₁ → PU42EK7₂

- DRAIN PAN has been added.

<"13. PARTS LIST" has been changed.>

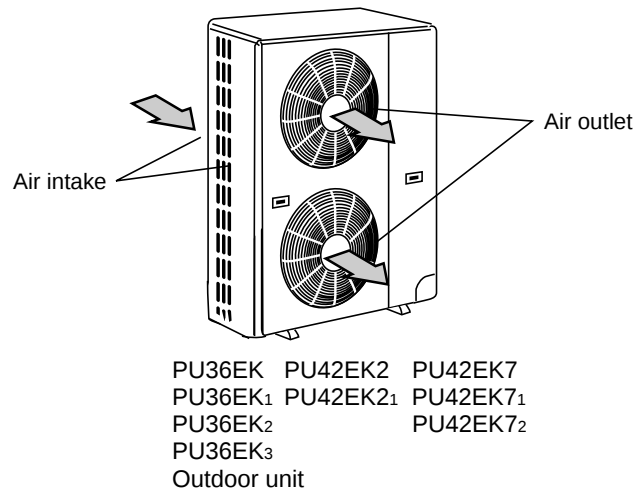
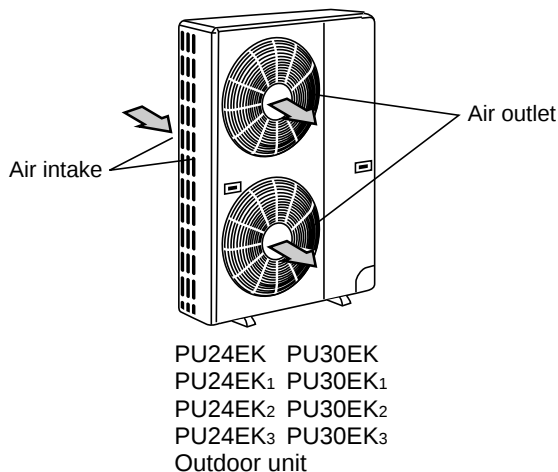
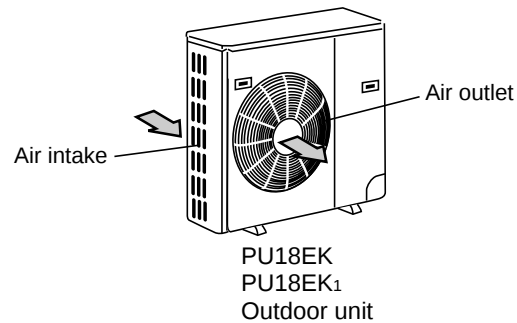
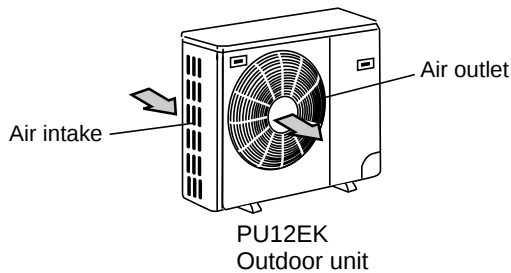
PU36EK₂ → PU36EK₃

- COMPRESSOR CAPACITOR for PU36EK, PU36EK₁, PU36EK₂ and PU36EK₃ are unified.

3 COMBINATION OF INDOOR AND OUTDOOR UNITS

Indoor unit		Outdoor unit											
		PU											
Models	Service manual No.	12	18		24		30		36		42		
		EK	EK	EK ₁	EK	EK ₁ EK ₂ EK ₃	EK	EK ₁ EK ₂ EK ₃	EK	EK ₁ EK ₂ EK ₃	EK ₂	EK ₂₁	EK ₇ EK ₇₁ EK ₇₂
PL • AK	OC246	○	—	○	—	○	—	○	—	○	—	—	○
PL • FK(2)	OC001 SECOND EDITION OC003 SECOND EDITION OC194	○	○	○	○	○	○	○	○	○	○	○	—
PC • EK	OC001 SECOND EDITION OC003 SECOND EDITION OC192	—	—	—	○	○	○	○	○	○	○	○	—
PK • EK	OC001 SECOND EDITION OC003 SECOND EDITION	○	○	○	○	○	○	○	—	—	—	—	—
PK • FK(3)	OC121, OC196A OC274	○	—	○	—	○	—	○	—	○	—	—	—
PK • FL(3)	OC185A, OC275	—	—	○	—	○	—	○	—	○	—	—	—
PC • GK	OC278	—	—	—	—	○	—	○	—	○	—	—	○

4 PART NAMES AND FUNCTIONS



MODELS : PU12EK PU18EK PU24EK PU30EK PU36EK PU42EK2 PU42EK7
PU18EK₁ PU24EK₁ PU30EK₁ PU36EK₁ PU42EK₂₁ PU42EK₇₁
PU24EK₂ PU30EK₂ PU36EK₂ PU42EK₇₂
PU24EK₃ PU30EK₃ PU36EK₃

Model		PU12EK	PU18EK	PU24EK		PU30EK		PU36EK		PU42EK2	PU42EK7
Item											
OUTDOOR UNIT MODELS		PU12EK	PU18EK PU18EK ₁	PU24EK PU24EK ₁	PU24EK ₂ PU24EK ₃	PU30EK PU30EK ₁	PU30EK ₂ PU30EK ₃	PU36EK PU36EK ₁	PU36EK ₂ PU36EK ₃	PU42EK2 PU42EK2 ₁	PU42EK7 PU42EK7 ₁ PU42EK7 ₂
External finish		Munsell 5Y 7/1									
Power supply V, phase, Hz		208/230, 1, 60									
Max.fuse size (time delay) A		15	20			30			40		
Min.ampacity A		11	16			20		22		27	28
Fan motor F.L.A.		0.65	0.75	0.65+0.65				0.75+0.75		0.8+0.8	
Compressor	Model (type)	RH167NAB	RH247NAB	NH33NBD	NH33NBDT	NH41NAD	NH41NAHT	NH47NAD	NH47NAHT	NH569NXA	ZR42K3PFV
	R.L.A.	8.9	12.0	11.5	10.8	14.0	12.9	17.5	15.1	20.0	20.4
	L.R.A.	29	37	52	57	73	75	87	81	105	109
Crankcase heater A(W)		0.11/0.12(23/28)			0.16/0.17(33/39)						
Refrigerant control		Capillary tube									
Sound level dB		50	53	55					56		
Dimensions	W in.	34-1/4						38-3/16			
	D in.	11-5/8						13-9/16			
	H in.	25-9/16	33-1/2	49-9/16							
Weight lb		105	154	207	208	210	220	222	260	220	
Control voltage (by built-in transformer)		Indoor unit-outdoor unit:DC12V									
REFRIGERANT	Name	R22									
	Charge	4 lbs 14 oz	5 lbs 8 oz	9 lbs 15 oz	10 lbs 2 oz	10 lbs 9 oz	12 lbs 9 oz	11 lbs 0 oz			
	Oil<Model> OZ	16<MS-56>			37<MS32(N-1)>	40<MS32(N-1)>			49<MS32(N-1)>	42<SONTEX 200LT>	
REFRIGERANT PIPING		Not supplied(optional parts)									
Pipe size	Liquid in.	3/8				1/2					
	Gas in.	5/8				3/4					
Connection method	Indoors	Flared									
	Outdoors	Flared									
Between the indoor & outdoor units	Height difference ft	Max. 130			Max. 164						
	Piping length ft	Max. 130			Max. 164						

Operating range

		Indoor intake air temperature	Outdoor intake air temperature
Cooling	Maximum	D.B. 95°F, W.B. 71°F	D.B. 115°F
	Minimum	D.B. 67°F, W.B. 57°F	D.B. 0°F *

* In case of the wind baffle installed.

(In case of the wind baffle is not installed, the minimum temperature is D.B. 23°F)

1. ADDITIONAL REFRIGERANT CHARGE (R22 : oz)

Service Ref.	Piping length (one way)						Factory charged
	100 ft	115 ft	130 ft	145 ft	160 ft	164 ft	
PU12EK	0	2	4	—	—	—	4 lbs 14 oz
PU18EK PU18EK ₁	0	2	4	—	—	—	5 lbs 8 oz
PU24EK PU24EK ₁ PU24EK ₂ PU24EK ₃	0	2	4	6	8	9	9 lbs 15 oz
PU30EK PU30EK ₁ PU30EK ₂ PU30EK ₃	0	5	10	14	19	20	10 lbs 2 oz
PU36EK PU36EK ₁ PU36EK ₂ PU36EK ₃	0	5	10	14	19	20	10 lbs 9 oz
PU42EK2 PU42EK2 ₁	0	5	10	14	19	20	12 lbs 9 oz
PU42EK7 PU42EK7 ₁ PU42EK7 ₂	0	5	10	14	19	20	11 lbs 0 oz

2. COMPRESSOR TECHNICAL DATA

at 68°F (Only PU42EK7 PU42EK7₁ : at 77°F)

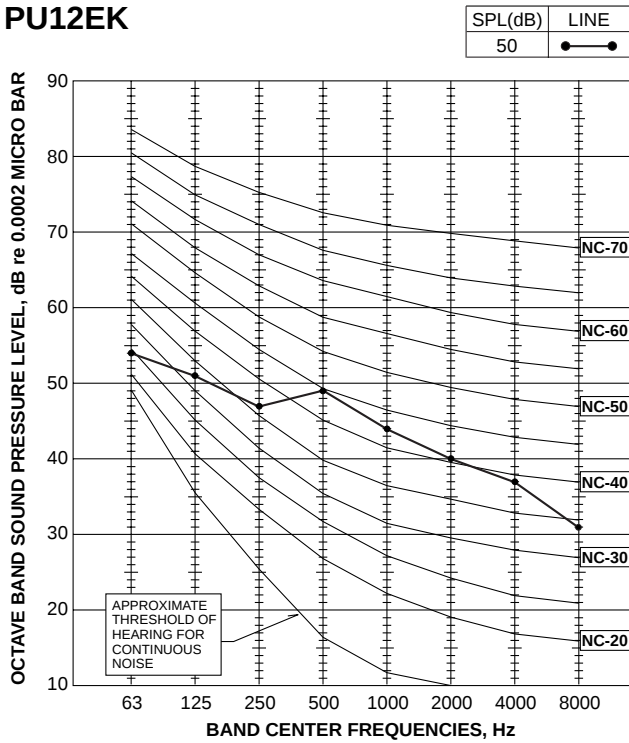
Unit		PU12EK	PU18EK PU18EK ₁	PU24EK PU24EK ₁	PU24EK ₂ PU24EK ₃	PU30EK PU30EK ₁	PU30EK ₂ PU30EK ₃
Compressor model		RH167NAB	RH247NAB	NH33NBD	NH33NBDT	NH41NAD	NH41NAHT
Winding Resistance (Ω)	R-C	2.47	1.59	0.92	0.92	0.63	0.62
	S-C	4.62	3.22	1.93	1.93	1.37	1.51

at 68°F(Only PU42EK7 PU42EK7₁ : at 77°F)

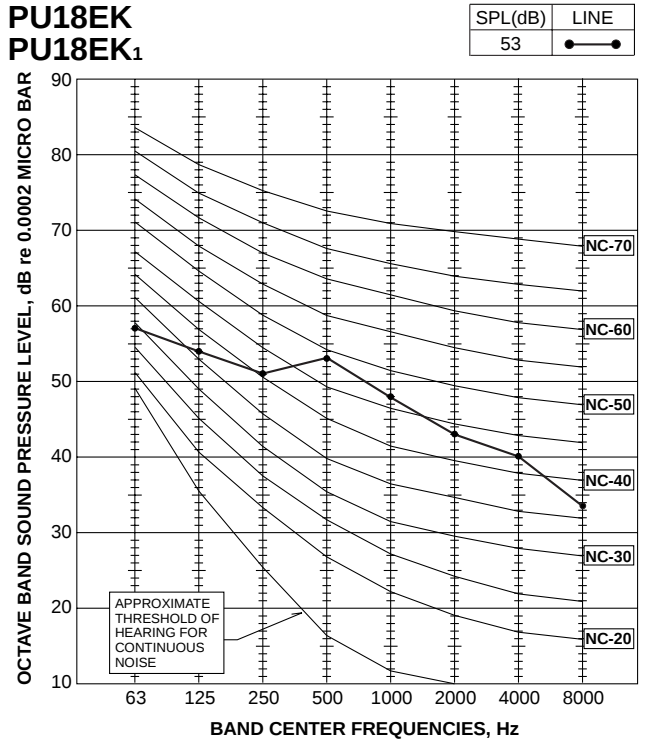
Unit		PU36EK PU36EK ₁	PU36EK ₂ PU36EK ₃	PU42EK2 PU42EK2 ₁	PU42EK7 PU42EK7 ₁ PU42EK7 ₂
Compressor model		NH47NAD	NH47NAHT	NH569NXA	ZR42K3PFV
Winding Resistance (Ω)	R-C	0.55	0.52	0.55	0.54
	S-C	1.24	1.28	1.24	1.28

3. NOISE CRITERION CURVES

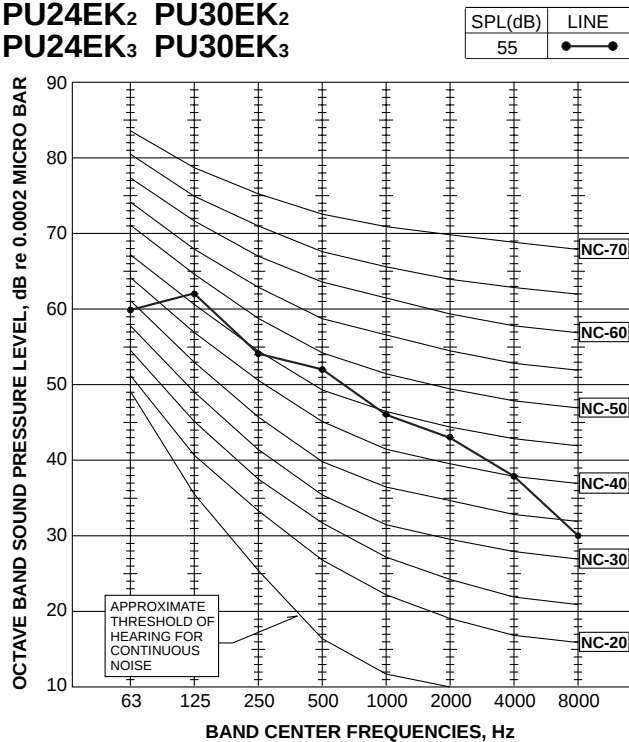
PU12EK



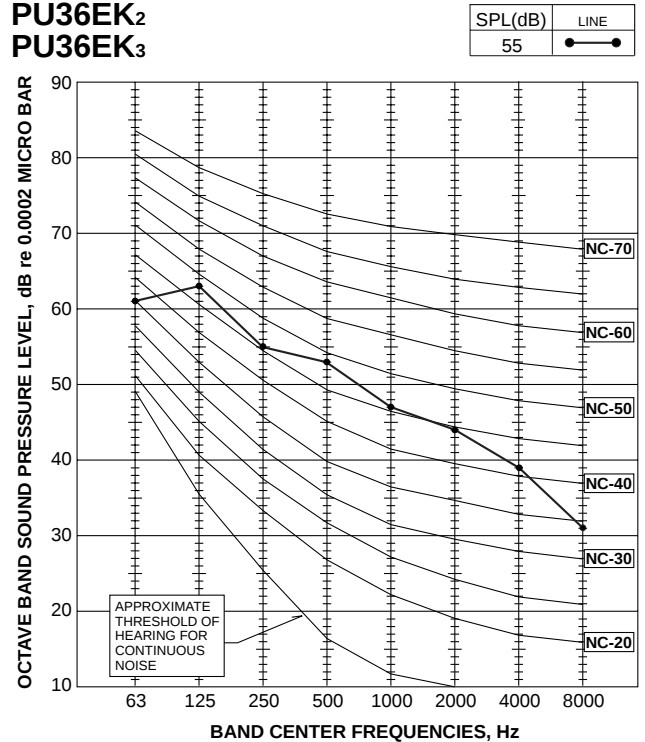
PU18EK PU18EK₁



PU24EK PU30EK PU24EK₁ PU30EK₁ PU24EK₂ PU30EK₂ PU24EK₃ PU30EK₃

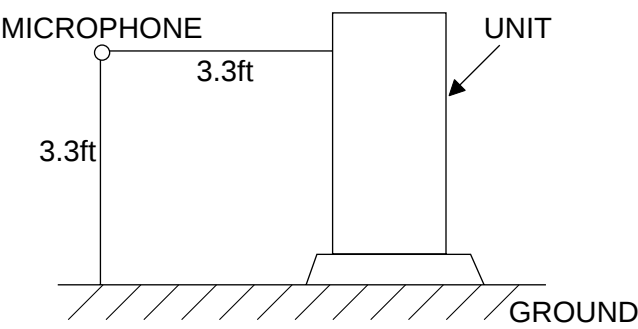
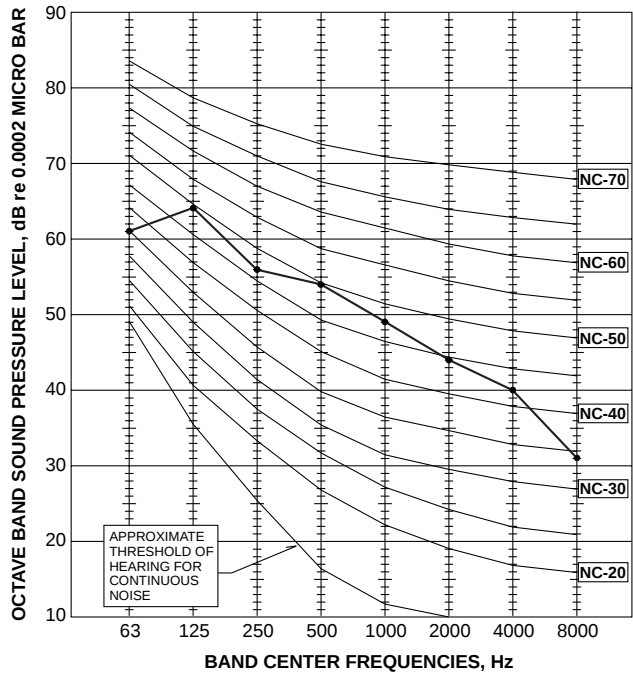


PU36EK PU36EK₁ PU36EK₂ PU36EK₃



PU42EK2 **PU42EK7**
PU42EK2₁ **PU42EK7₁**
 PU42EK7₂

SPL(dB)	LINE
56	

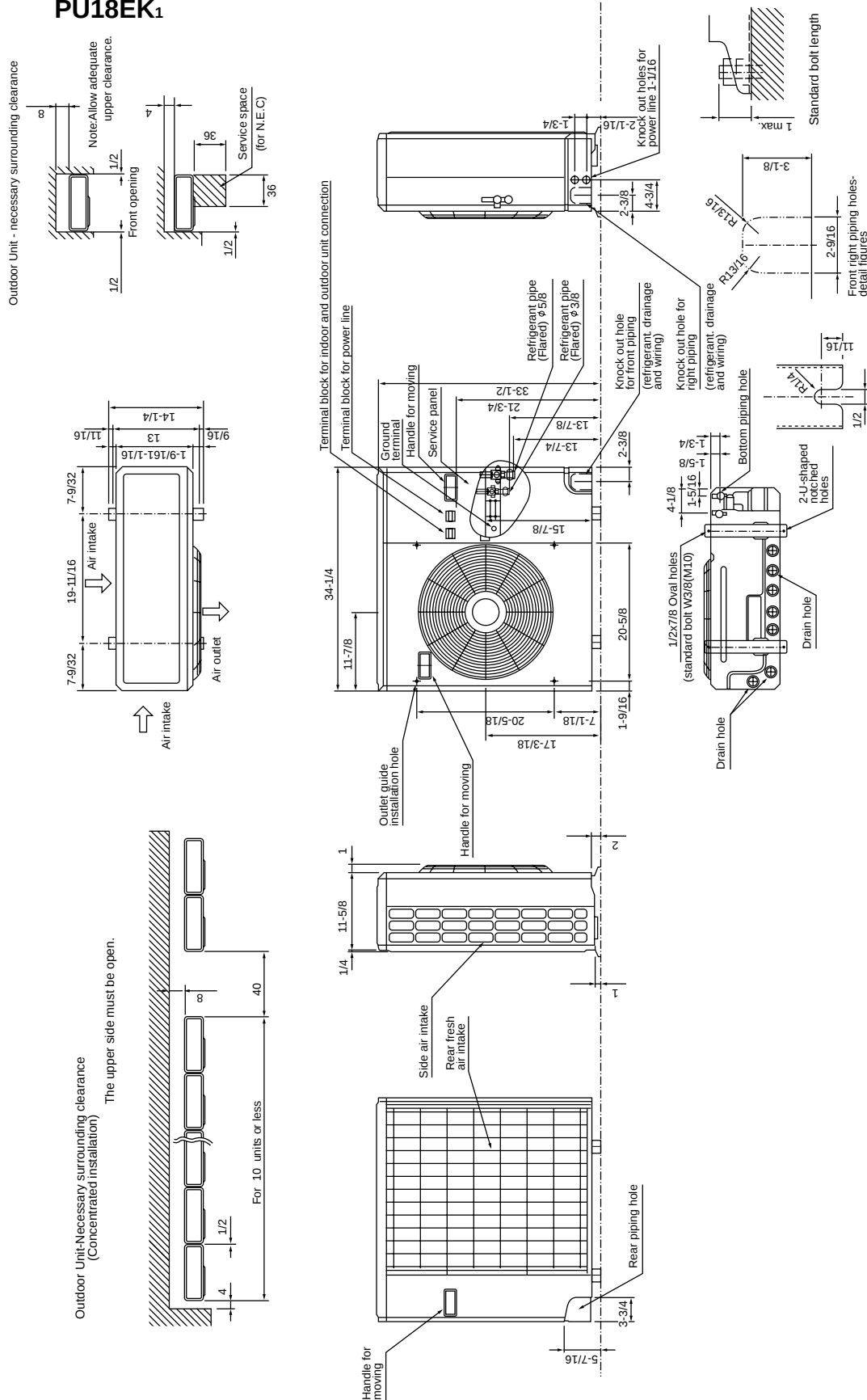


Unit : inch



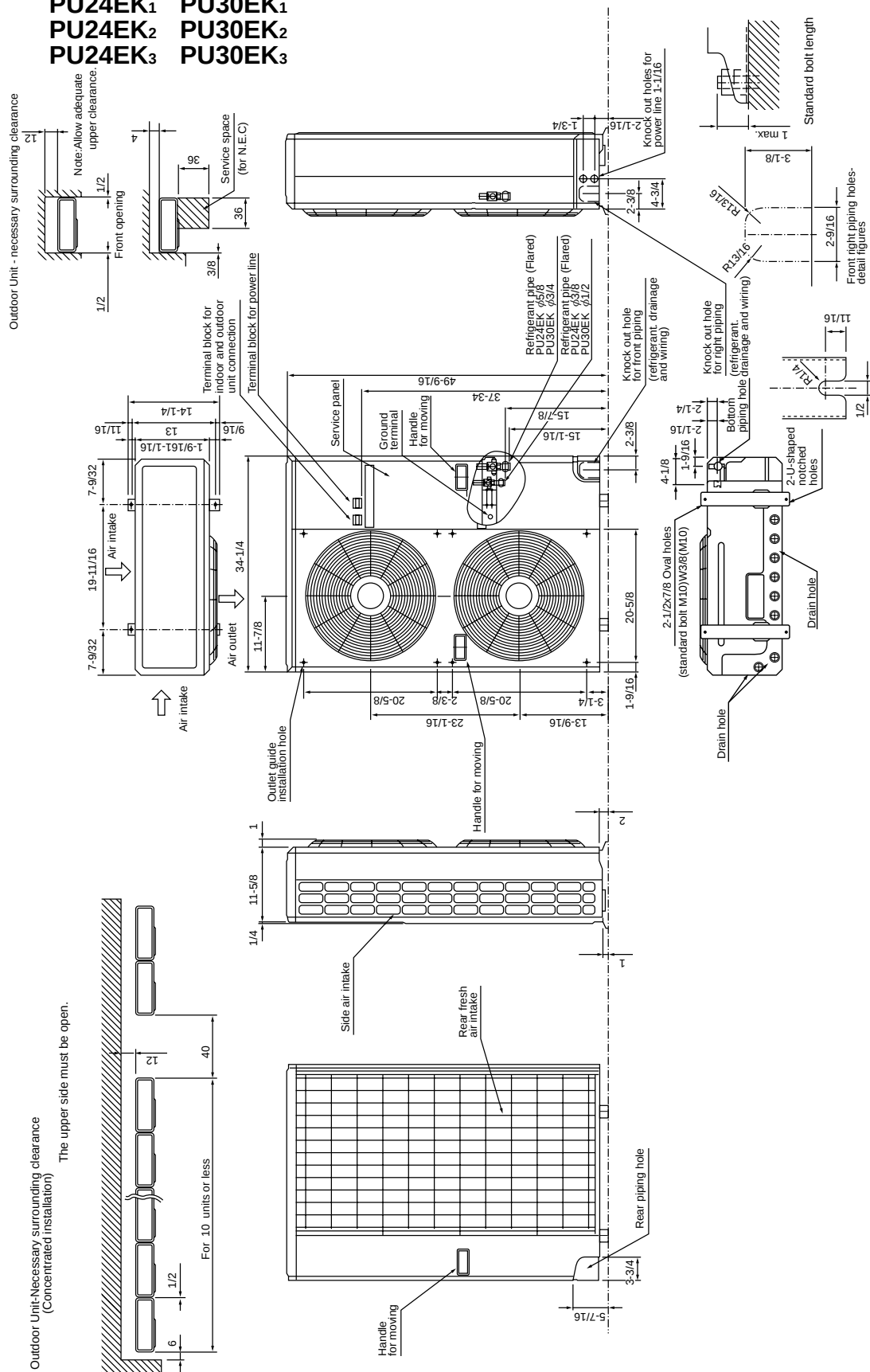
Outdoor Unit PU18EK PU18EK₁

Unit : inch

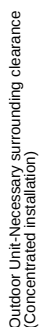


Outdoor Unit **PU24EK** **PU30EK**
PU24EK₁ **PU30EK₁**
PU24EK₂ **PU30EK₂**
PU24EK₃ **PU30EK₃**

Unit : inch



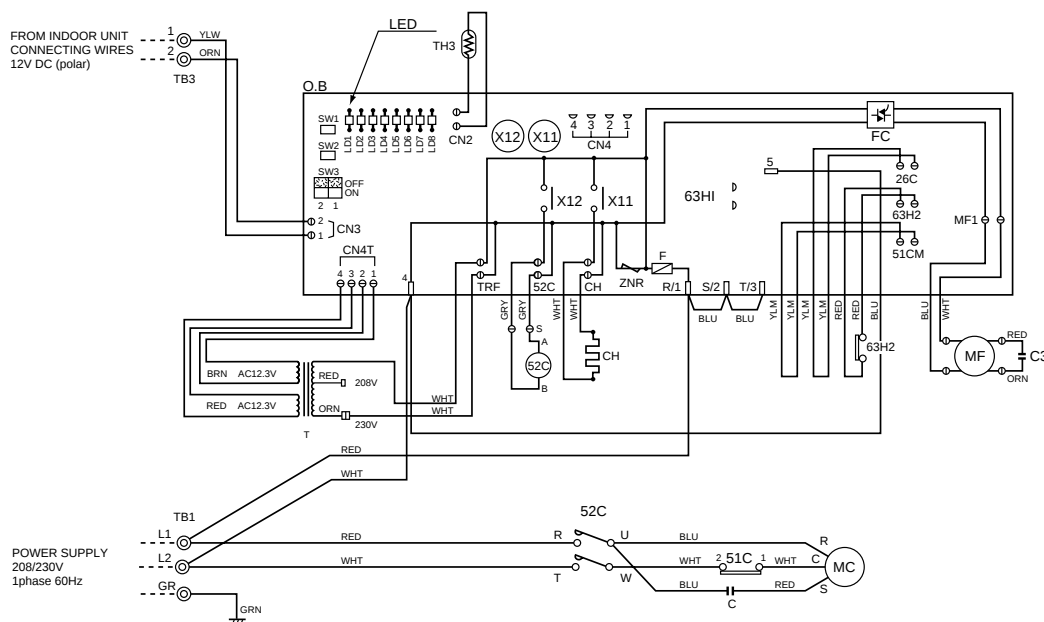
Unit : inch



The upper side must be open.

MODEL : PU12EK PU18EK 1

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	COMPRESSOR CAPACITOR	LD1 ~ LD8	LED <CHECK, SERVICE>	TH3	OUTDOOR COIL THERMISTOR
C3	FAN CAPACITOR	MC	COMPRESSOR	X11 <O. B>	CRANKCASE HEATER RELAY
CH	CRANKCASE HEATER	MF	OUTDOOR FAN MOTOR (INNER THERMOSTAT)	X12 <O. B>	COMPRESSOR RELAY
CN3<O. B>	CONNECTING WIRES INDOOR/OUTDOOR CONNECTOR	O. B	OUTDOOR CONTROLLER BOARD	ZNR <O. B>	VARIATOR
CN4T<O. B>	TRANSFORMER CONNECTOR	SW1, 2, 3<O. B>	SELECT SWITCH <CHECK, SERVICE>	52C	CONTACTOR
		T	TRANSFORMER	63H2	HIGH PRESSURE SWITCH <PROTECT>
		FC <O. B>	FAN CONTROLLER	TB1	POWER SUPPLY TERMINAL BLOCK
		F <O. B>	FUSE <6A>	TB3	CONNECTING WIRES INDOOR/OUTDOOR TERMINAL BLOCK
				51C	OVERCURRENT RELAY



Main functions of LED (when both No. 1 and 2 of [SW3] are "OFF")

LED NO.	Output display (light)	Check display (flush)
LD1	Compressor indoor command	—
LD2	—	—
LD3	—	TH3 short / open
LD4	Compressor ON	63H2 functions
LD5	Outdoor fan ON	—
LD6	—	—
LD7	—	TH3 overheat protection
LD8	Crankcase heater ON	Defective input

NOTES :If the operation stops to function of the protection device, the check display flashes.

How to use SW1 and 2

- Pressing [SW1] erases the past check contents loaded on the micro-computer.
- The output display (light) remains during operation but pressing [SW2] displays the past check contents in flashing mode. Pressing the switch again returns to output display (light).

CAUTION FOR SERVICING

- The connector marked  is to turn the compressor ON-OFF during servicing. The compressor stops by disconnecting the white connector as shown at the right.

CAUTION FOR POWER SUPPLY WIRING

- Since LD8 lights when normal power is turned "ON", check the power supply with the "ON" or "OFF" LD8.
- ※ Since the indoor transformer (T) is connected with 230V power, if 208V power is used, change the wiring connection in the following Procedure.

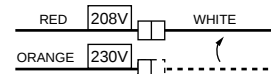
CAUTION FOR INDOOR AND OUTDOOR CONNECTING WIRES

- Since the indoor and outdoor connecting wires has polarity, make sure to connect the same terminal numbers (1, 2) for indoor and outdoor units.

※ White connector

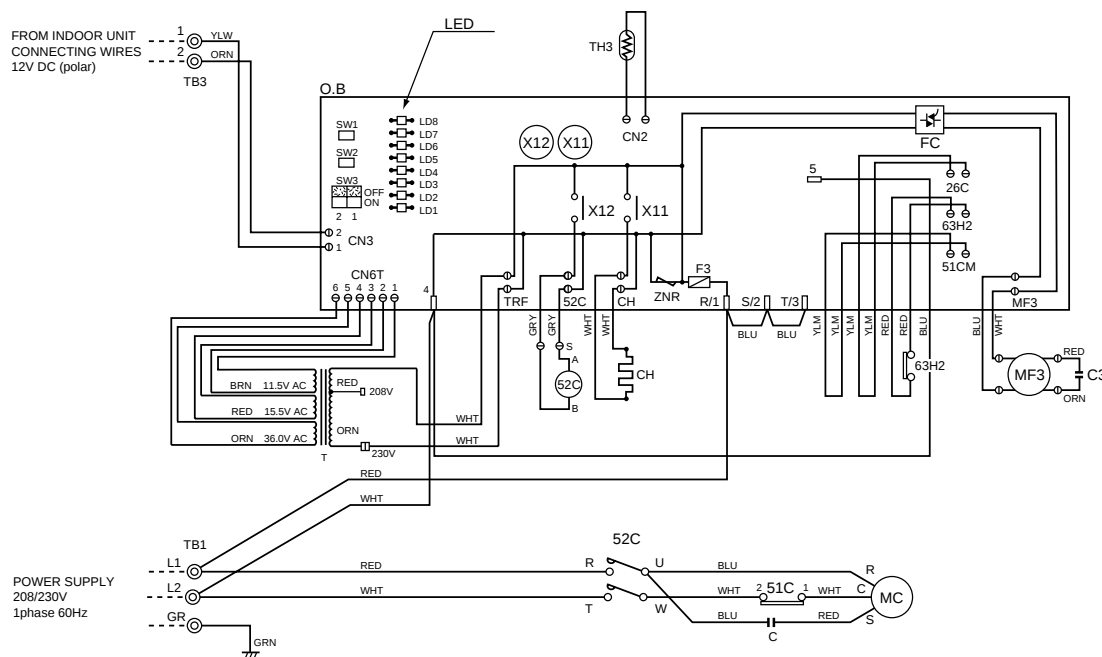


※ When power Supply is 208V



MODELS : PU18EK

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	COMPRESSOR CAPACITOR	LD1 ~ LD8	LED <CHECK, SERVICE>	TH3	OUTDOOR COIL THERMISTOR
C3	FAN CAPACITOR	MC	COMPRESSOR	X11 <O. B>	CRANKCASE HEATER RELAY
CH	CRANKCASE HEATER	MF3	OUTDOOR FAN MOTOR (INNER THERMOSTAT)	X12 <O. B>	COMPRESSOR RELAY
CN3<O. B>	CONNECTING WIRES INDOOR/OUTDOOR CONNECTOR	O. B	OUTDOOR CONTROLLER BOARD	ZNR <O. B>	VARIATOR
CN6T<O. B>	TRANSFORMER CONNECTOR	SW1, 2, 3<O. B>	SELECT SWITCH <CHECK, SERVICE>	52C	CONTACTOR
		T	TRANSFORMER	63H2	HIGH PRESSURE SWITCH <PROTECT>
		FC <O. B>	FAN CONTROLLER	TB1	POWER SUPPLY TERMINAL BLOCK
		F3 <O. B>	FUSE <6A>	TB3	CONNECTING WIRES INDOOR/OUTDOOR TERMINAL BLOCK
				51C	OVERCURRENT RELAY



Main functions of LED (when both No. 1 and 2 of [SW3] are "OFF")

LED NO.	Output display (light)	Check display (flush)
LD1	Compressor indoor command	—
LD2	—	—
LD3	—	Pipe temperature sensor short / open
LD4	Compressor ON	63H2 functions
LD5	Outdoor fan ON	—
LD6	—	—
LD7	—	TH3 overheat protection
LD8	Crankcase heater ON	Defective input

NOTES :If the operation stops to function of the protection device, the check display flashes.

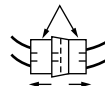
How to use SW1 and 2

- Pressing [SW1] erases the past check contents loaded on the micro-computer.
- The output display (light) remains during operation but pressing [SW2] displays the past check contents in flashing mode. Pressing the switch again returns to output display (light).

CAUTION FOR SERVICING

- The connector marked  is to turn the compressor ON-OFF during servicing. The compressor stops by disconnecting the white connector as shown at the right.

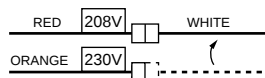
※ White connector



CAUTION FOR POWER SUPPLY WIRING

- Since LD8 lights when normal power is turned "ON", check the power supply with the "ON" or "OFF" LD8.
- ※ Since the indoor transformer (T) is connected with 230V power, if 208V power is used, change the wiring connection in the following Procedure.

※ When power Supply is 208V

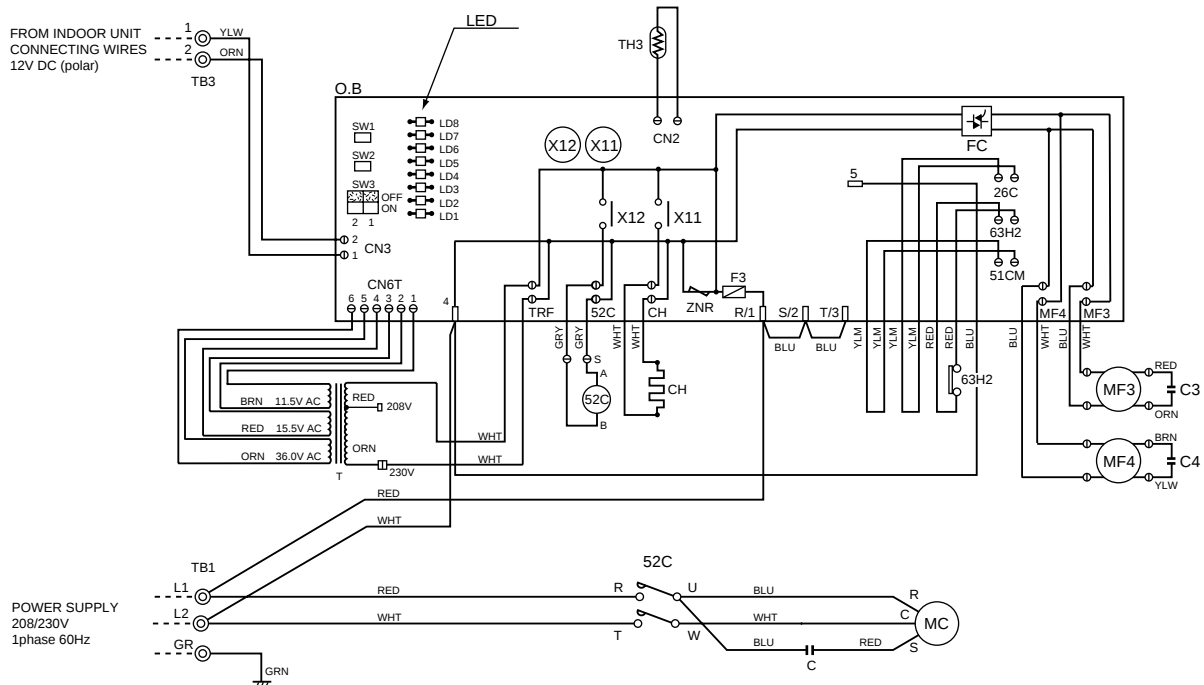


CAUTION FOR INDOOR AND OUTDOOR CONNECTING WIRES

- Since the indoor and outdoor connecting wires has polarity, make sure to connect the same terminal numbers (1, 2) for indoor and outdoor units.

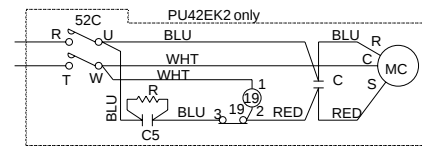
MODELS : PU24EK PU30EK PU36EK PU42EK2

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	COMPRESSOR CAPACITOR	LD1-LD8	LED <CHECK, SERVICE>	TH3	OUTDOOR COIL THERMISTOR
C3, 4	FAN CAPACITOR	MC	COMPRESSOR (INNER THERMOSTAT)	X11 <O. B>	CRANKCASE HEATER RELAY
CH	CRANKCASE HEATER	MF3, 4	OUTDOOR FAN MOTOR (INNER THERMOSTAT)	X12 <O. B>	COMPRESSOR RELAY
CN3<O. B>	CONNECTING WIRES INDOOR/OUTDOOR CONNECTOR	O. B	OUTDOOR CONTROLLER BOARD	ZNR <O. B>	VARIATOR
CN6T<O. B>	TRANSFORMER CONNECTOR	SW1, 2, 3<O. B>	SELECT SWITCH <CHECK, SERVICE>	52C	CONTACTOR
FC <O. B>	FAN CONTROLLER	T	TRANSFORMER	63H2	HIGH PRESSURE SWITCH <PROTECT>
F3<O. B>	FUSE <6A>	TB1	POWER SUPPLY TERMINAL BLOCK	R	RESISTOR
		TB3	CONNECTING WIRES INDOOR/OUTDOOR TERMINAL BLOCK	C5	COMPRESSOR START CAPACITOR
				19	COMPRESSOR START RELAY



Main functions of LED (when both No. 1 and 2 of [SW3] are "OFF")

LED NO.	Output display (light)	Check display (flush)
LD1	Compressor indoor command	—
LD2	—	—
LD3	—	TH3 short / open
LD4	Compressor ON	63H2 functions
LD5	Outdoor fan ON	—
LD6	—	—
LD7	—	TH3 overheat protection
LD8	Crankcase heater ON	Defective input



NOTES :If the operation stops to function of the protection device, the check display flashes.

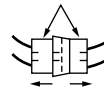
How to use SW1 and 2

- Pressing [SW1] erases the past check contents loaded on the micro-computer.
- The output display (light) remains during operation but pressing [SW2] displays the past check contents in flashing mode. Pressing the switch again returns to output display (light).

CAUTION FOR SERVICING

- The connector marked  is to turn the compressor ON-OFF during servicing. The compressor stops by disconnecting the white connector as shown at the right.

※ White connector



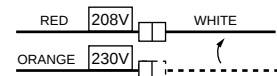
CAUTIONS FOR POWER SUPPLY WIRING

- Since LD8 lights when normal power is turned "ON", check the power supply with the "ON" or "OFF" LD8.
- ※ Since the indoor transformer (T) is connected with 230V power, if 208V power is used, change the wiring connection in the following Procedure.

CAUTION FOR INDOOR AND OUTDOOR CONNECTING WIRES

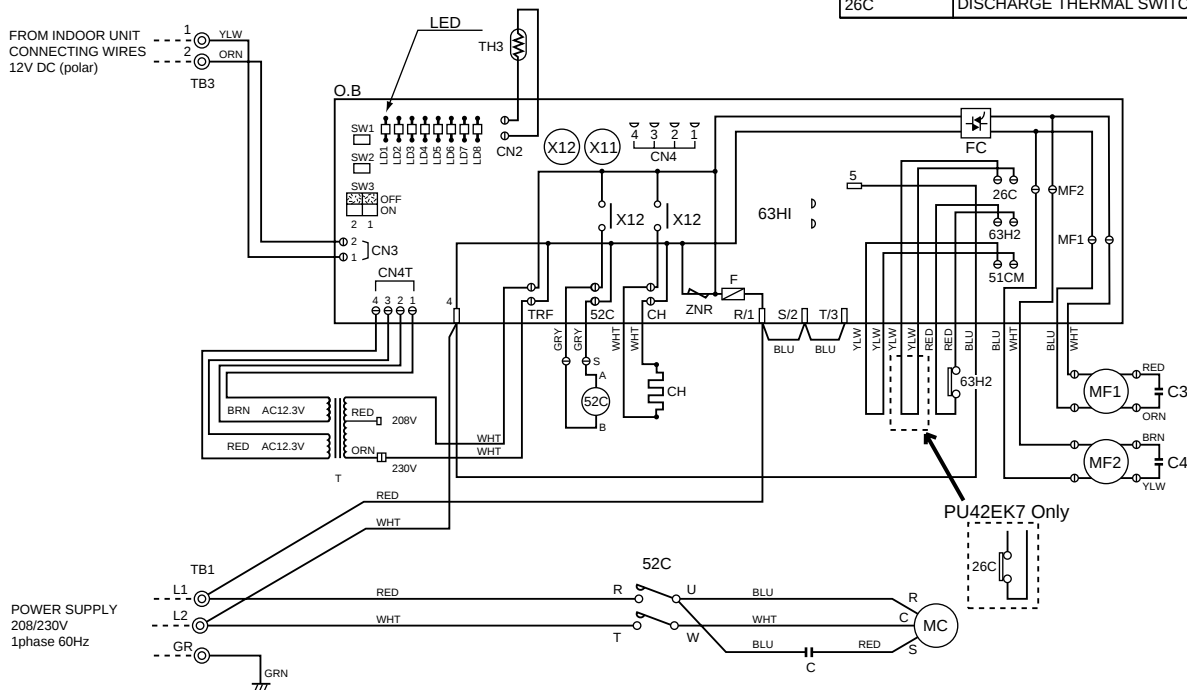
- Since the indoor and outdoor connecting wires has polarity, make sure to connect the same terminal numbers (1, 2) for indoor and outdoor units.

※ When power Supply is 208V



MODELS : PU24EK₁ PU30EK₁ PU36EK₁ PU42EK2₁ PU42EK7
PU24EK₂ PU30EK₂ PU36EK₂
PU24EK₃ PU30EK₃ PU36EK₃

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	COMPRESSOR CAPACITOR	LD1~LD8	LED <CHECK, SERVICE>	TH3	OUTDOOR COIL THERMISTOR
C3, 4	FAN CAPACITOR	MC	COMPRESSOR (INNER THERMOSTAT)	X11 <O. B>	CRANKCASE HEATER RELAY
CH	CRANKCASE HEATER	MF1, 2	OUTDOOR FAN MOTOR (INNER THERMOSTAT)	X12 <O. B>	COMPRESSOR RELAY
CN3<O. B>	CONNECTING WIRES INDOOR/OUTDOOR CONNECTOR	O. B	OUTDOOR CONTROLLER BOARD	ZNR <O. B>	VARIATOR
CN4T<O. B>	TRANSFORMER CONNECTOR	SW1, 2, 3<O. B>	SELECT SWITCH <CHECK, SERVICE>	52C	CONTACTOR
FC <O. B>	FAN CONTROLLER	T	TRANSFORMER	63H2	HIGH PRESSURE SWITCH <PROTECT>
F <O. B>	FUSE <6A>	TB1	POWER SUPPLY TERMINAL BLOCK	R	RESISTOR
		TB3	CONNECTING WIRES INDOOR/OUTDOOR TERMINAL BLOCK	C5	COMPRESSOR START CAPACITOR
				19	COMPRESSOR START RELAY
				26C	DISCHARGE THERMAL SWITCH



Main functions of LED (when both No. 1 and 2 of [SW3] are "OFF")

LED NO.	Output display (light)	Check display (flush)
LD1	Compressor indoor command	—
LD2	—	—
LD3	—	TH3 short / open
LD4	Compressor ON	63H2 functions
LD5	Outdoor fan ON	—
LD6	—	26C functions (PU42EK7)
LD7	—	TH3 overheat protection
LD8	Crankcase heater ON	Defective input

NOTES :If the operation stops to function of the protection device, the check display flashes.

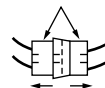
How to use SW1 and 2

- Pressing [SW1] erases the past check contents loaded on the micro-computer.
- The output display (light) remains during operation but pressing [SW2] displays the past check contents in flashing mode. Pressing the switch again returns to output display (light).

CAUTION FOR SERVICING

- The connector marked ① is to turn the compressor ON-OFF during servicing. The compressor stops by disconnecting the white connector as shown at the right.

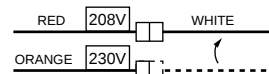
※ White connector



CAUTIONS FOR POWER SUPPLY WIRING

- Since LD8 lights when normal power is turned "ON", check the power supply with the "ON" or "OFF" LD8.
- ※ Since the indoor transformer (T) is connected with 230V power, if 208V power is used, change the wiring connection in the following Procedure.

※ When power Supply is 208V

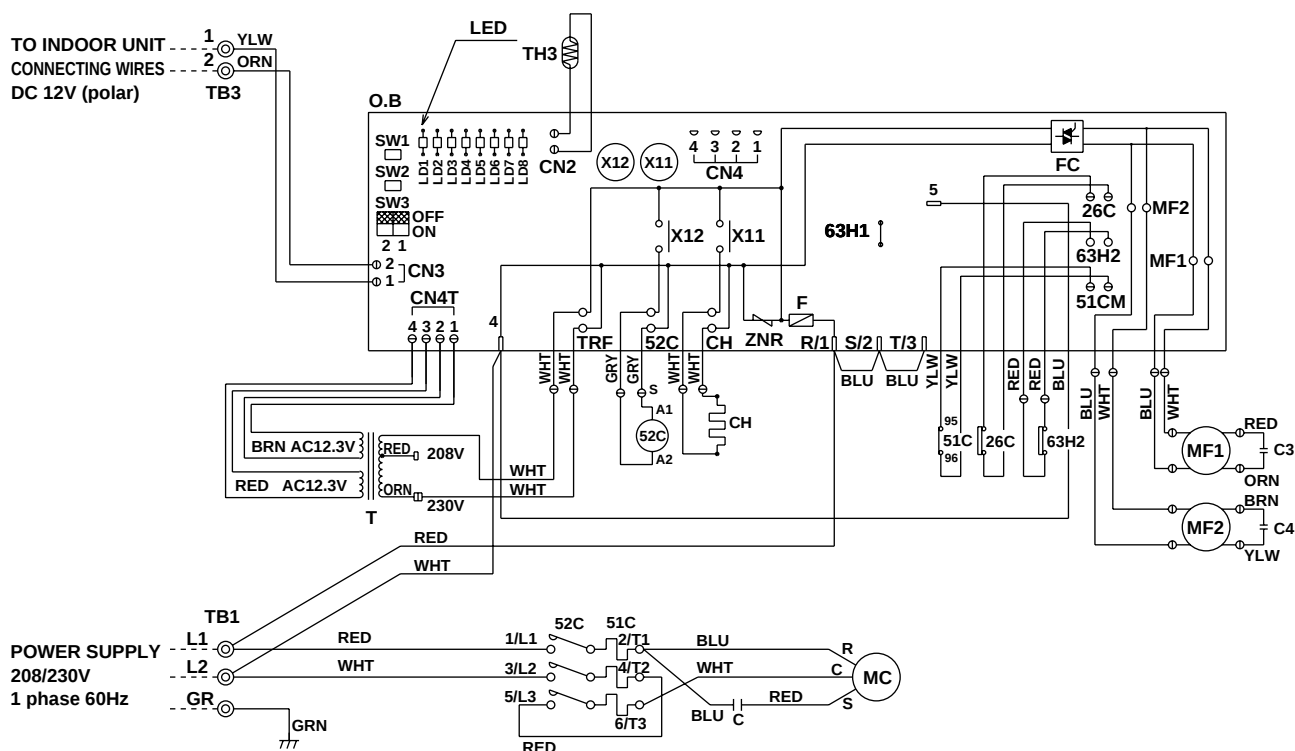


CAUTION FOR INDOOR AND OUTDOOR CONNECTING WIRES

- Since the indoor and outdoor connecting wires has polarity, make sure to connect the same terminal numbers (1, 2) for indoor and outdoor units.

MODEL : PU42EK7₁ PU42EK7₂

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CN3<O.B>	CONNECTOR (CONNECTING WIRES INDOOR/OUTDOOR)	LD1-LD8	LED(CHECK, SERVICE)	TH3	THERMISTOR FOR PIPE TEMPERATURE (32°F/15kΩ, 77°F/5.4kΩ)
CN4T<O.B>	CONNECTOR(TRANSFORMER)	MC	COMPRESSOR MOTOR (INNER THERMOSTAT)	X11<O.B>	AUXILIARY RELAY FOR CH
CH	CRANKCASE HEATER	MF1, 2	FAN MOTOR (INNER THERMOSTAT)	X12<O.B>	AUXILIARY RELAY FOR MC
C3, 4	RUN CAPACITOR FOR MF1,2	O.B	OUTDOOR CONTROLLER BOARD	ZNR<O.B>	VARIATOR
C	RUN CAPACITOR FOR MC	SW1-2-3<O.B>	SELECT SWITCH(CHECK,SERVICE)	51C	THERMAL RELAY
FC<O.B>	FAN CONTROLLER	T	TRANSFORMER	52C	MAGNETIC CONTACTOR FOR MC
F<O.B>	FUSE(6A/250V)	TB1	TERMINAL BLOCK(POWER SUPPLY)	63H2	HIGH PRESSURE SWITCH(PROTECT)
		TB3	TERMINAL BLOCK (CONNECTING WIRES INDOOR/OUTDOOR)	26C	DISCHARGE THERMAL SWITCH



Main functions of LED (When both No.1 and 2 of [SW3] are "OFF")

LED NO.	Output display(light)	Check display(flush)
LD1	Compressor indoor command	—
LD2	—	—
LD3	—	Pipe temperature sensor short/open
LD4	Compressor ON	63H2 functions
LD5	Outdoor fan ON	51C functions
LD6	—	26C functions
LD7	—	TH3 overheat protection
LD8	Crankcase heater ON	Defective input

NOTE: If the operation stops to function of the protection device, the check display flushes.

CAUTION FOR SERVICING

- The connector marked  for 52C is to turn the compressor ON-OFF during servicing. The compressor stops by disconnecting the white connector as shown at the right.

CAUTIONS FOR POWER SUPPLY WIRING

- Since LD8 lights when normal power is turned "ON", check the power supply with the "ON" or "OFF" LD8.
- ※ Since the indoor transformer (T) is connected with 230V power, if 208V power is used, change the wiring connection as shown at the right.

CAUTION FOR INDOOR AND OUTDOOR CONNECTING WIRES

- Since the indoor and outdoor connecting wires has polarity, make sure to connect the same terminal numbers (1, 2) for indoor and outdoor units.

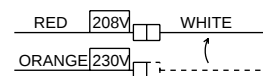
How to use SW1 and 2

- Pressing [SW1] erases the past check contents loaded on the microcomputer.
- The output display (light) remains during operation but pressing [SW2] displays the past check contents in flushing mode. Pressing the switch again returns to output display (light).

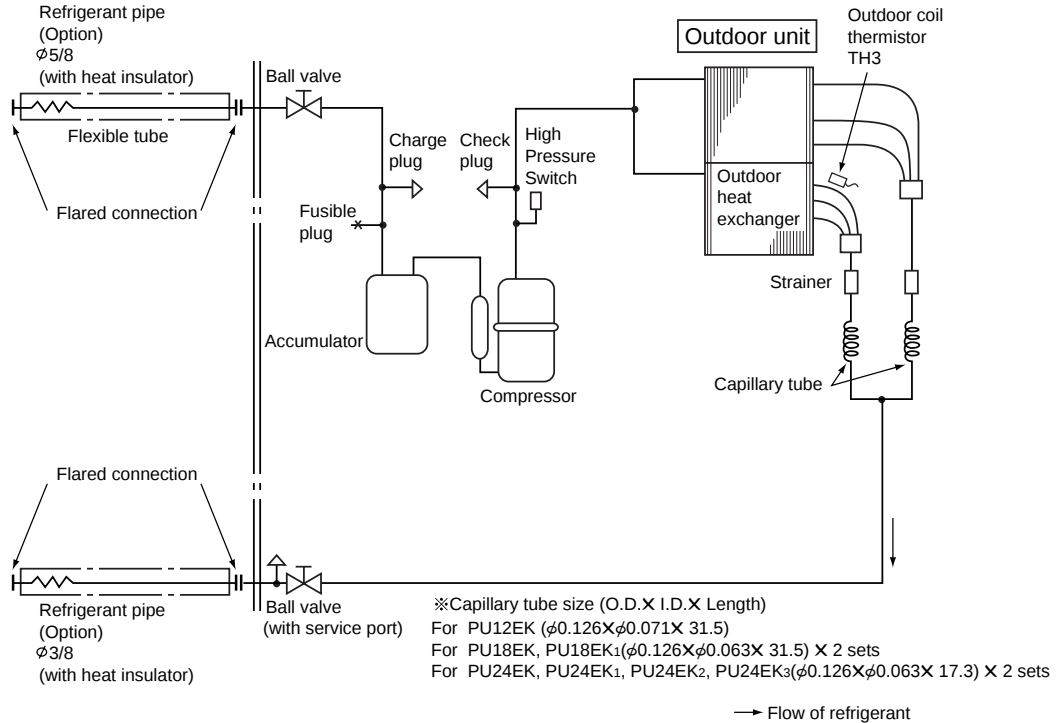
White connector



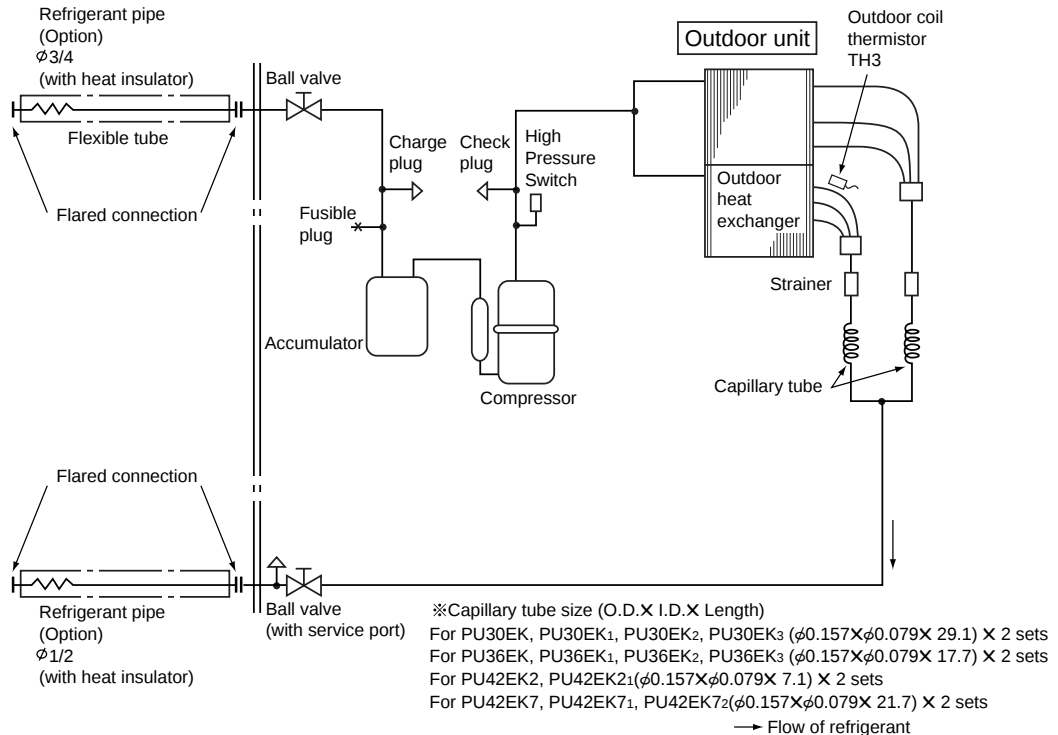
※ When Power Supply is 208V



PU12EK PU18EK PU24EK
 PU18EK₁ PU24EK₁
 PU24EK₂
 PU24EK₃



PU30EK PU36EK PU42EK₂ PU42EK₇
 PU30EK₁ PU36EK₁ PU42EK₂₁ PU42EK₇₁
 PU30EK₂ PU36EK₂ PU42EK₇₂
 PU30EK₃ PU36EK₃ PU42EK₇₃



NOTE :The symbol ϕ indicates the diameter.

OUTDOOR MICROPROCESSOR CONTROL

1. Protection function

- (1) As soon as a reversed phase, an open phase, or a P. C. board trouble is sensed, the operation stops and the check code is displayed by LED on the outdoor controller board.
- (2) When a protection function such as high pressure switch and overcurrent relay works for the first time, the operation stops and restarts after 3-minute time delay mode. When the second protection function works, the operation stops and the check code is displayed by LED. This condition continues until the outdoor unit receives OFF command from the indoor controller board. Check code indication continues until the outdoor unit receives the ON command from the indoor controller board.
- (3) The second protection function is not necessary to be the same as the first one. The content of the second protection function is loaded in the memory, which is cleared when SW1 turns to ON or the next check mode starts.

2. Control by outdoor coil thermistor

- (1) Unit control
Outdoor coil temperature range for control is from -40°F to 194°F. When reading 194°F or above, the outdoor coil thermistor is regarded as short-circuit. When reading -40°F or below, the outdoor coil thermistor is regarded as open-circuit. An open circuit is not sensed for the first 7 min. after the compressor start up, but is sensed during defrosting operation or for the first 10 seconds after the compressor start-up.
- (2) Target temperature of outdoor coil temperature
Fan rotational frequency is controlled so that the outdoor coil temperature keeps $95^{\circ}\text{F} \pm 4^{\circ}\text{F}$.

3. Unit operation control

The compressor receives signal from the indoor unit and make the outdoor unit start or stop.

4. Fan control

Fan rotational frequency is phase-controlled so that the outdoor coil temperature reaches the target temperature. This control enables cooling operation even if the outdoor temperature is low. Fan rotational frequency is adjusted by fan output. Fan output is divided into 256 steps from 0 to 255 and is controlled every 30 seconds.

- (1) Initial setting
 - A. When power is turned to on, or when the compressor restarts after interval of 30 minutes or more :
 - If the outdoor coil thermistor reads 46°F or below, the fan output step becomes 100.
 - If the outdoor coil thermistor reads above 46°F, the fan output step becomes 200.
 - B. When the compressor restarts within 30 minutes after stop, the fan output step is the same as the fan output before the compressor stops.
 - C. When the operation mode is changed within 30 minutes after the compressor stop, the fan output step becomes 100.
 - D. When the operation mode is changed after the compressor interval of more than 30 minutes, the fan output step is the same as described in A.
- (2) For the first 2 minutes after the compressor start-up, the fan operates at the initial setting output, and then every other 30 seconds, the fan output is adjusted depending on the difference between the outdoor coil temperature and the target temperature. But as soon as the outdoor coil temperature becomes 122°F or above, the fan output step becomes 255.
- (3) When the outdoor coil thermistor reads 122°F or above, the fan output step becomes 255.
- (4) When the high pressure switch (63H1) functions, the fan output step becomes 255. After that, when the switch returns, the fan control returns to the normal control.

5. Crankcase heater control

- (1) With jumper wire J3
The crankcase heater is ON from the power is turned to on till the compressor starts, and turns to ON 1 hour after the compressor stop.
- (2) Without jumper wire J3
The crankcase heater is ON from the power is turned to on till the compressor starts, and repeats ON/OFF on a 1-hour schedule.

6. Fixed fan-output

While the compressor is operating and the fan output step is indicated by LED, pushing SW2 fixes the fan output of that time. The fixed fan-output can be released when either of the following conditions is satisfied.

- ① SW2 is pushed again.
- ② SW3 setting is changed.
- ③ The compressor stops.

7. Function of switches on the outdoor controller board

SW1 : Clears the check code memory (push-button switch)
SW2 : Switches the output state indication and the check code display (push-button switch)
SW3-1and3- 2 : Switches the output state indication items (dip-switch)
For further information, please refer to page 21.

8. Operation during the power-on-reset state

(1) When the circuit breaker is turned to ON, the microprocessor enters the power-on-reset state, which continues until the direct current for the microprocessor control reaches 12V. Then the microprocessor starts operation in the following order.

- ① Each I/O port clearance
 - ② Function input
- Function depends on jumper wires set beforehand in the factory.

Jumper wire	Function	With jumper wire	Without jumper wire
J1	Reversed phase sensor	Sensed	Not sensed
J2	Not applied for series PU		
J3	Crankcase heater control	Refer to 5 (1) on page 19.	Refer to 5 (2) on page 19.
J4	Target temperature of outdoor coil temperature	86°F For heat pump units	95°F For cooling unit

- ③ Check for a reversed phase
 - ④ Check for an open phase (with J1)
 - ⑤ 50/60Hz judgment
 - ⑥ EEPROM data loading (check mode, and total time of compressor operation)
 - ⑦ Coil temperature initial input
- (2) If an open phase or a reversed phase is sensed, LED blinks every other second.

NOTE

- ✱ If power is not supplied to the transformer and the microprocessor, the microprocessor does not work and can sense neither a reversed phase nor an open phase.
- ✱ If a contact point of protective device such as the high pressure switch has already been opened in the power-on-reset state, it is regarded as an open phase.
In this case, all LED are OFF.

9. 100% fan output

Fan output is fixed to 255 (100%) by shorting CN22. However, the fan stops during compressor OFF or defrosting operation. Open circuit of CN22 enables the fan control to start.

10. Time shortening

Short circuit of CN21 shortens the time listed below.

- 1) Fan control period : 30 sec. → 3 sec.
- 2) Three-minute time delay function : 3 min. → 3 sec.
- 3) Compressor ON/OFF time for bypass valve ON/OFF : 30 min. → 30 sec.
- 4) Compressor ON time to start other functions : x min. → x sec.

1. SERVICE DATA INDICATION BY SWITCHES ON OUTDOOR CONTROLLER BOARD

Setting dip switches SW2 and SW3 on the outdoor controller board enables LED to show the output state and check code. Output state is shown by LED lighting, and check code by blinking.

SW1 : Turning SW1 ON clears the check code. If SW1 is turned ON while the check code is blinking , the indication changes to output state indication.

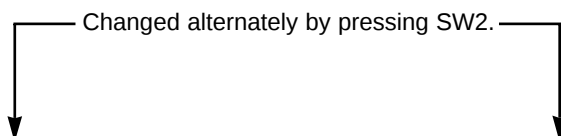
NOTE : SW1 is usually available independent of SW3 setting. As an exception, when the check code shows a reversed phase or an open phase during the power-on-reset state, SW1 is not available.

SW2 : SW2 is turned ON by pressing, and OFF by releasing.

When SW3-1 and SW3-2 are OFF, pressing SW2 changes indication between output state and check code alternately.

When SW2 is turned On with SW3-1 OFF and SW3-2 ON, the compulsory defrosting starts.

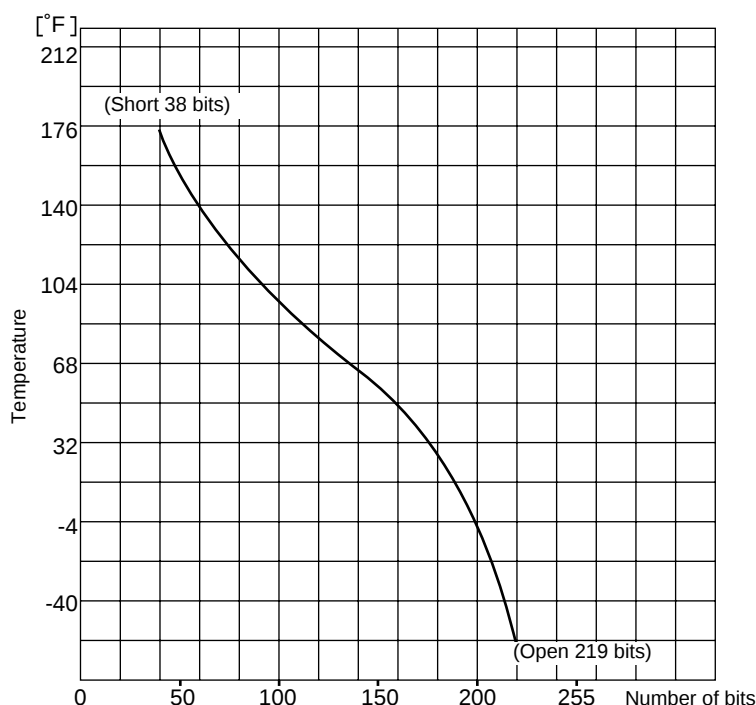
SW3 : Output state indication items depend on the combination of SW3-1 ON/OFF and SW3-2 ON/OFF.



	Check code	Output state	Outdoor coil temperature (bit)	Fan output step (bit)	Total time of compressor operation(Hr)
SW3-1	OFF	OFF	OFF	ON	ON
SW3-2	OFF	OFF	ON	OFF	ON
LED	Blinking	Lighting			
LD1	Reversed phase	Compressor ON command from indoor controller	1	1	256
LD2	Open phase	Heating operation command from indoor controller	2	2	512
LD3	Outdoor coil thermistor is abnormal.	During 63H1 function	4	4	1024
LD4	63H2 function	Compressor ON	8	8	2048
LD5	51C function	Outdoor fan ON	16	16	4096
LD6	26C function	4-way valve ON (HEAT PUMP Only)	32	32	8192
LD7	Overheat protection	Bypass valve ON (HEAT PUMP Only)	64	64	16384
LD8	Input circuit on controller board is abnormal	Crankcase heater ON	128	128	32768

1-1 Outdoor coil temperature

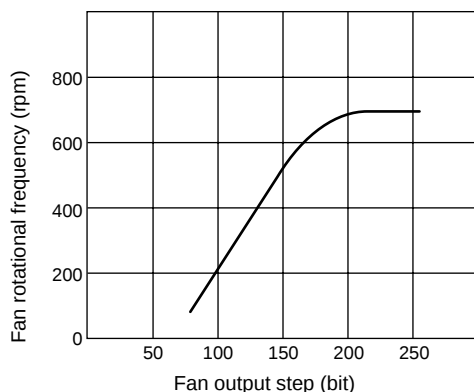
To obtain data on the outdoor coil temperature, add the number of bits of lighting LEDs, and see the graph to find the temperature.



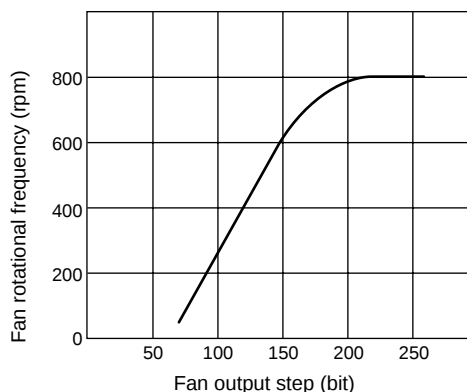
1-2 Fan output step

To obtain data on the fan output step, add the number of bits of lighting LEDs, and see the graph below to find the fan rotational frequency.

① PU12EK PU24EK PU30EK
 PU24EK₁ PU30EK₁
 PU24EK₂ PU30EK₂
 PU24EK₃ PU30EK₃



② PU18EK PU36EK PU42EK₂ PU42EK₇
 PU18EK₁ PU36EK₁ PU42EK₂₁ PU42EK₇₁
 PU36EK₂ PU42EK₇₂
 PU36EK₃



1-3 Total time of compressor operation

Compressor operation time is indicated in 256 hour units. To obtain the compressor operation time, add the hours of lighting LEDs. During the compressor operation time indication, SW2 is not available.

1-4 Check code indication

- When a protection function works for the first time during operation, the operation stops and restarts after the 3-minutes time delay mode. When the protection function works again, the operation stops. (Check mode) When both SW3-1 and SW3-2 are OFF, the check code is indicated.
- If the outdoor controller board receives the compressor ON command from the indoor controller board during check mode the indication changes to output state indication.
- By pressing SW2 during normal operation. operation will continue.
- The latest check code is indicated.

2. TROUBLESHOOTING ACCORDING TO CHECK CODE

Blinking LED	Diagnosis of malfunction	Cause	Check point
LD1	Reversed phase	This model does not have this function.	No need to be checked.
LD2	Open phase	This model does not have this function.	No need to be checked.
LD3	Outdoor coil thermistor is abnormal. (Open circuit or short circuit)	● Outdoor coil thermistor is broken. ● Thermistor was connected incorrectly.	● Measure the resistance of the thermistor. ● Check the thermistor. If normal, replace the outdoor controller board.
LD4	High pressure switch (63H2) function	● 63H2 was badly connected. ● 63H2 was working.	● Check 63H2 and the outdoor fan motor. ● Check if refrigerant supply is low. ● Check if air cycle is short-cycled.
LD5	Thermal relay function (PU42EK7)	● 51C is working.	● Check 51C.
LD6	Thermal switch (26C) function (PU42EK7) (PU42EK7 ₁)	● 26C was connected incorrectly. ● 26C is working.	● Check 26C. ● Check if refrigerant supply is low. ● Check if the capillary tube is clogged.
LD7	Over heat protection	● The thermistor is broken. ● Coil temperature is over 153°F.	● Measure the resistance of the thermistor. ● Check the outdoor fan motor. ● Check if air cycle is short-cycled.
LD8	Input circuit of outdoor controller board is abnormal.	● Pulse input is abnormal.	● Replace the outdoor controller board.

3. WHEN OUTDOOR UNIT DOES NOT WORK

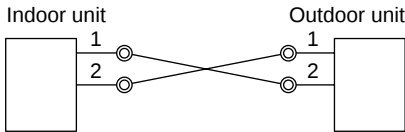
Cause	Check points
1) Indoor/outdoor connecting wires are poorly connected. (Refer to next page.) 2) Power supply is poorly connected. 3) Connector or transformer is broken. 4) Fuse (6A) in the outdoor controller board is blown.	1) Check the connecting wires. 2) Check the power supply. 3) Check connector and transformers. 4) Check the fuse.

4. WRONG WIRING ON SITE

4-1 Between remote controller and indoor unit

If wire is disconnected between the remote controller and the indoor unit, the POWER ON display does not appear despite turning the power switch ON. The beep sound is not heard, either.

4-2 Phenomena due to wrong wiring between indoor and outdoor units

Wrong wiring	Thermostat	Phenomena
	OFF	The outdoor unit stops.
	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
Disconnect between 1 and 1 or 2 and 2.	OFF	Operation stops.
	ON	9 minutes later, the check code "P8" appears on the remote controller display.

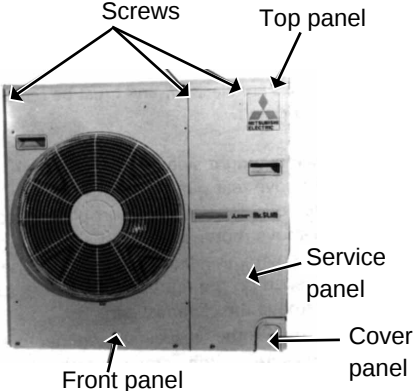
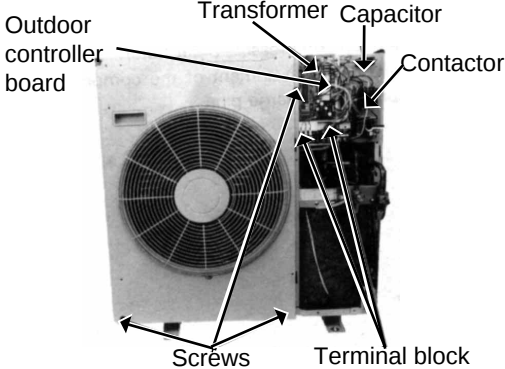
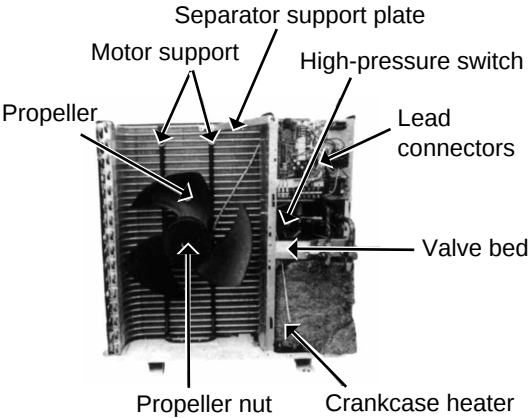
5. HOW TO CHECK THE PARTS

PU12EK PU18EK PU24EK PU30EK PU36EK PU42EK2 PU42EK7
PU18EK₁ PU24EK₁ PU30EK₁ PU36EK₁ PU42EK2₁ PU42EK7₁
PU24EK₂ PU30EK₂ PU36EK₂ PU42EK7₂
PU24EK₃ PU30EK₃ PU36EK₃

Parts name	Check points																					
OUTDOOR COIL THERMISTOR (TH3)	Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 50°F~86°F) <table><tr><td>Normal</td><td>Abnormal</td></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table>	Normal	Abnormal	4.3kΩ~9.6kΩ	Open or short																	
Normal	Abnormal																					
4.3kΩ~9.6kΩ	Open or short																					
FAN MOTOR(MF,1,2,3,4) [PU12,18,24,30]	Measure the resistance between the terminals using a tester. (Surrounding temperature 68°F) <table><tr><th rowspan="2">Motor terminal or Relay connector</th><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><th>PU12,18</th><th>PU24,30</th><th>PU36</th><th>PU42</th><th rowspan="3">Open or short</th></tr><tr><td>White — Blue</td><td>77.3Ω</td><td>100.2Ω</td><td>73.9Ω</td><td>61.5Ω</td></tr><tr><td>Blue — Red (Brown)</td><td>134.6Ω</td><td>83.8Ω</td><td>118.7Ω</td><td>79.8Ω</td></tr></table>	Motor terminal or Relay connector	Normal				Abnormal	PU12,18	PU24,30	PU36	PU42	Open or short	White — Blue	77.3Ω	100.2Ω	73.9Ω	61.5Ω	Blue — Red (Brown)	134.6Ω	83.8Ω	118.7Ω	79.8Ω
Motor terminal or Relay connector	Normal				Abnormal																	
	PU12,18	PU24,30	PU36	PU42	Open or short																	
White — Blue	77.3Ω	100.2Ω	73.9Ω	61.5Ω																		
Blue — Red (Brown)	134.6Ω	83.8Ω	118.7Ω	79.8Ω																		
FAN MOTOR(MF,1,2,3,4) [PU36,42]	Protector OPEN : 275±9°F CLOSE : 187±27°F																					
CRANKCASE HEATER (HC)	Measure the resistance between the terminals using a tester. <table><tr><th colspan="2">Normal</th><th>Abnormal</th></tr><tr><td>PU12,18</td><td>PU24,30,36,42</td><th rowspan="2">Open or short</th></tr><tr><td>1920Ω</td><td>1340Ω</td></tr></table>	Normal		Abnormal	PU12,18	PU24,30,36,42	Open or short	1920Ω	1340Ω													
Normal		Abnormal																				
PU12,18	PU24,30,36,42	Open or short																				
1920Ω	1340Ω																					

Outdoor unit (PU18EK)

NOTE : All panels are clasped, and should be removed by shifting up and down.

OPERATING PROCEDURE	PHOTOS
1. Electrical parts (1) Remove top panel (3 screws in front, 2 screws in rear) (2) Remove cover panel (1 screw). The panel is anchored by clicks to the side panel. Remove by pulling towards you. (3) Remove cover panel (1 screw). The panel is anchored by clicks on the right and left sides. After removing the screw, pull the panel down and remove it by pulling towards you.	Photo 1  Photo 2 
2. Fan motor (1) Remove front panel (3 screws). Open the panel to a 45 degree angle and lift to remove. The panel is clasped at three points on the left side. (2) Remove propeller (1 set nut). (3) Remove fan motor (3 screws). Remove lead connector.	Photo 3 

OPERATING PROCEDURE

3. Heat Exchanger, Compressor

- (1) Remove the rear panel (2 screws in front, 1 screw on the side, 3 screws in the rear). Remove the valve bed, and open the rear panel to the rear to remove.
- (2) Remove right side panel (4 screws).
- (3) Remove rear guard (3 screws).
- (4) Remove separator support plate (4 screws).
- (5) Remove motor support (2 screws).
- (6) Remove valve bed (5 screws). The valve bed is clasped on the right and left sides. Lift to remove.
- (7) Remove the electrical parts box.
Remove the respective connector from high pressure switch, crank case heater, outdoor coil thermistor and fan motor lead.
- (8) Remove separator (2 screws).
- (9) Remove heat exchanger (2 screws).
Disconnect the welded section of pipe.
- (10) Remove compressor (3 set nuts).
Remove the weldment of the compressor suction pipe and discharge pipe.

PHOTOS

Photo 4

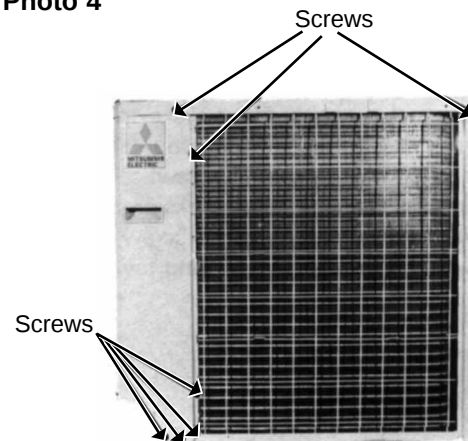


Photo 5

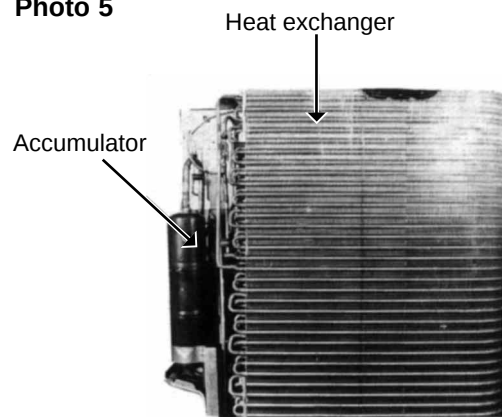
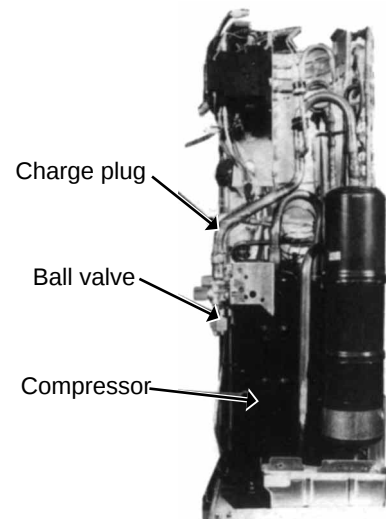


Photo 6



Outdoor unit (PU24EK)

NOTE : All panels are clasped, and should be removed by shifting up and down.

OPERATING PROCEDURE

1. Electrical parts

- (1) Remove top panel (3 screws in front, 2 screws in rear)
- (2) Remove cover panel (1 screw).
The panel is anchored by clicks to the side panel.
Remove by pulling towards you.
- (3) Remove cover panel (1 screw).
The panel is clasped on the right and left sides. After removing the screw, pull the panel down and remove it by pulling towards you.

PHOTOS

Photo 1

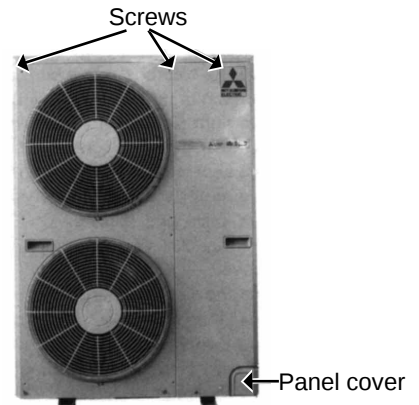
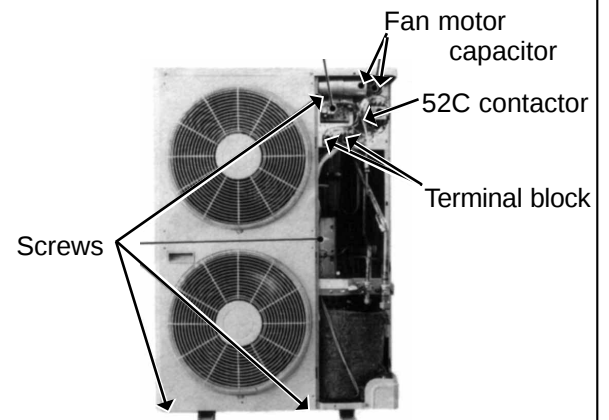


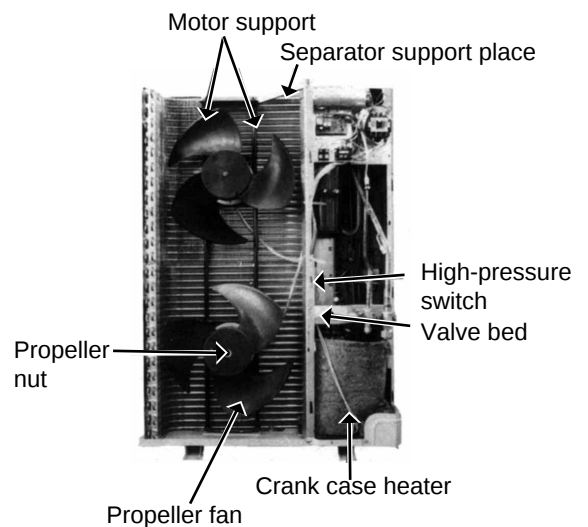
Photo 2



2. Fan motor

- (1) Remove front panel (3 screws).
Open the panel to a 45 degree angle and lift to remove. The panel is clasped at three points on the left side.
- (2) Remove propeller (1 set nut).
- (3) Remove fan motor (3 screws).
Remove lead connector.

Photo 3



OPERATING PROCEDURE

3. Heat Exchanger, Compressor

- (1) Remove the rear / right side panel (2 screws in front, 1 screw on the side, 3 screws in the rear).
Remove the electrical box, valve bed, and open to the rear to remove (anchors attached).
- (2) Remove right side panel (4 screws).
- (3) Remove rear guard (3 screws).
- (4) Remove separator support plate (4 screws).
- (5) Remove motor support (2 screws).
- (6) Remove valve bed (5 screws). The valve bed is clasped on the right and left sides. Lift to remove.
- (7) Remove the electrical parts box.
Remove the respective connector from high pressure switch, Low-pressure switch, crank case heater, shell thermo, and fan motor lead.
- (8) Remove separator (2 screws).
- (9) Remove heat exchanger (2 screws).
Remove piping weld zone.
- (10) Remove compressor (3 set nuts).
Remove the weldment of the compressor suction pipe and discharge pipe.

PHOTOS

Photo 4

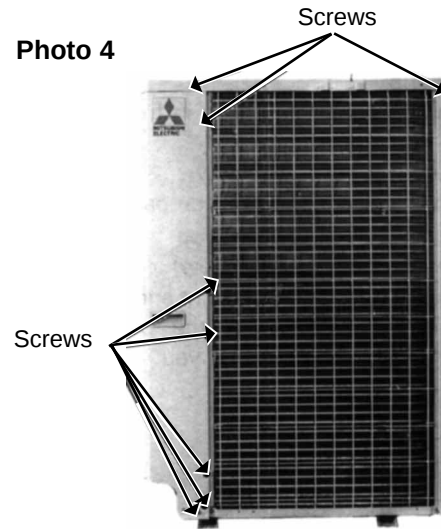


Photo 5

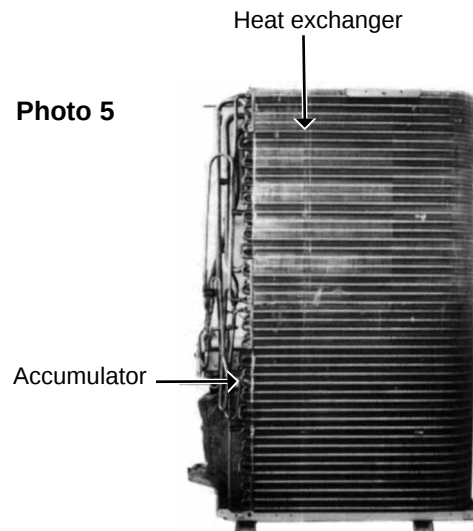
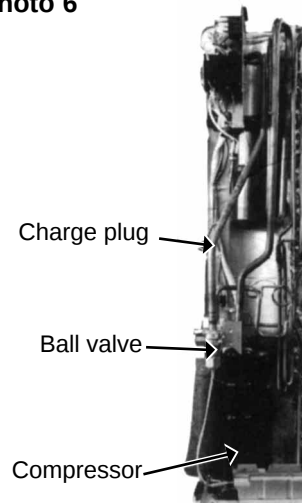
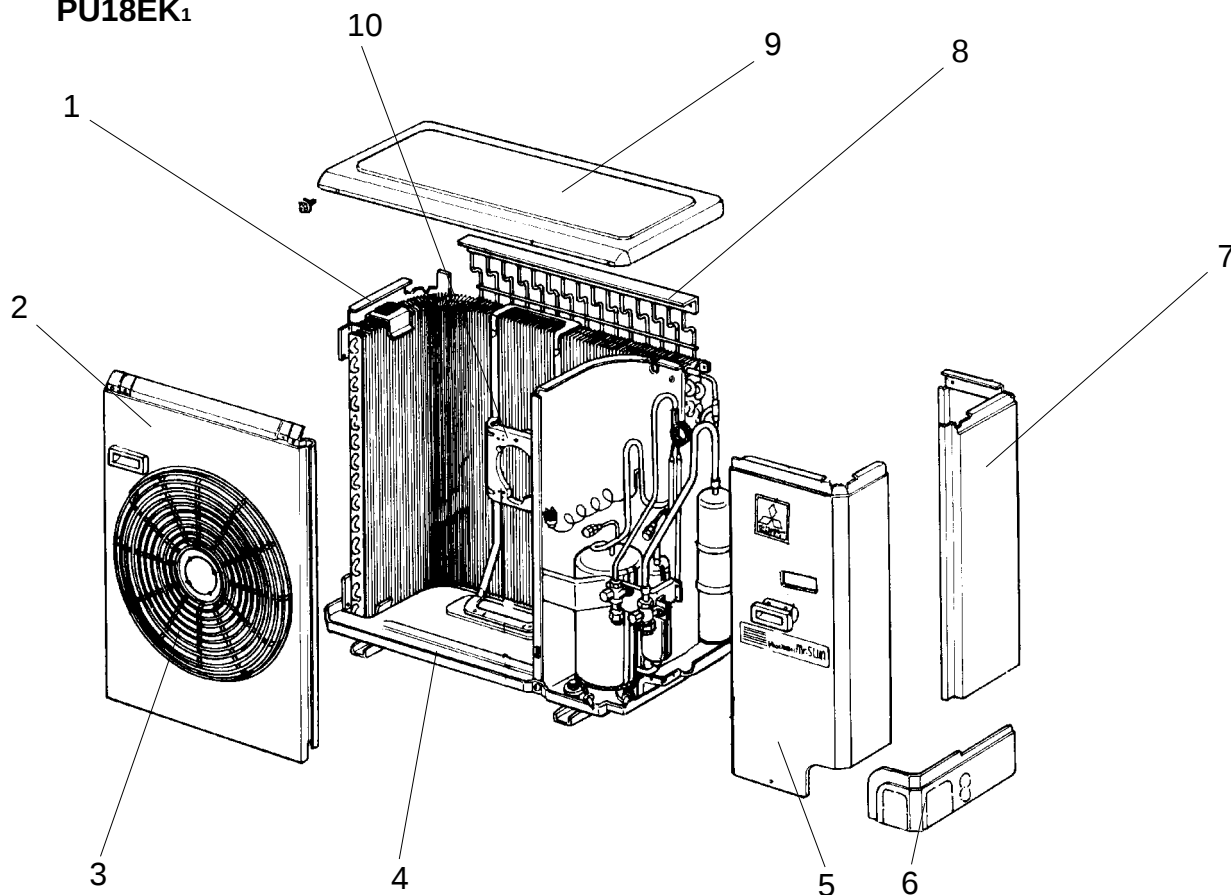


Photo 6



STRUCTURAL PARTS

PU12EK PU18EK
PU18EK₁



No.	Parts No.	Parts Name	Specifications	Q'ty / set			Remarks (Drawing No.)	Wiring Diagram Symbol
				PU				
				12EK	18EK	18EK ₁		
1	R01 A08 662	SIDE PANEL			1	1		
	R01 A00 662	SIDE PANEL		1				
2	R01 A08 668	FRONT PANEL			1	1		
	R01 A00 668	FRONT PANEL		1				
3	R01 A00 675	FAN GUARD		1	1	1		
4	R01 A00 686	BASE ASSEMBLY		1	1	1		
5	R01 A08 661	SERVICE PANEL			1	1		
	R01 A00 661	SERVICE PANEL		1				
6	R01 A00 658	PANEL COVER		1	1	1		
7	R01 A08 682	REAR PANEL			1	1		
	R01 A00 682	REAL PANEL		1				
8	R01 A08 698	REAR GUARD			1	1		
	R01 A00 698	REAR GUARD		1				
9	R01 A00 641	TOP PANEL		1	1	1		
10	T7W E03 130	MOTOR SUPPORT		1	1	1		

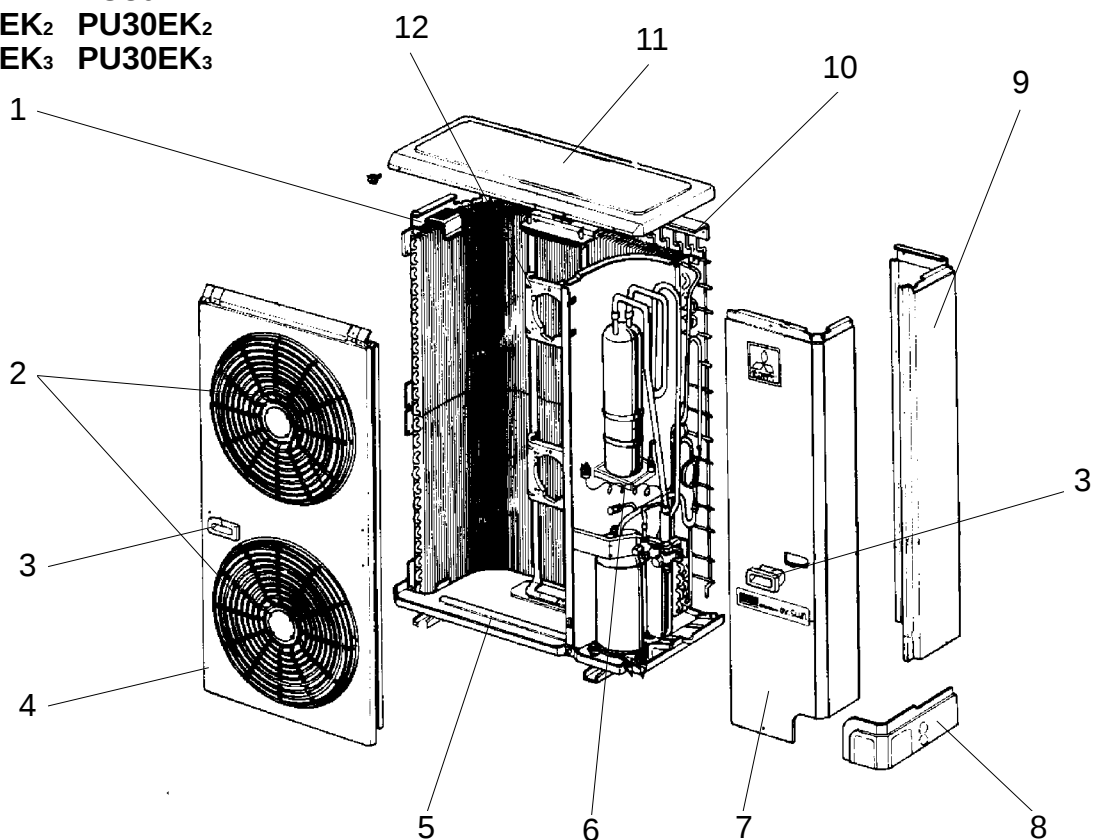
STRUCTURAL PARTS

PU24EK PU30EK

PU24EK₁ PU30EK₁

PU24EK₂ PU30EK₂

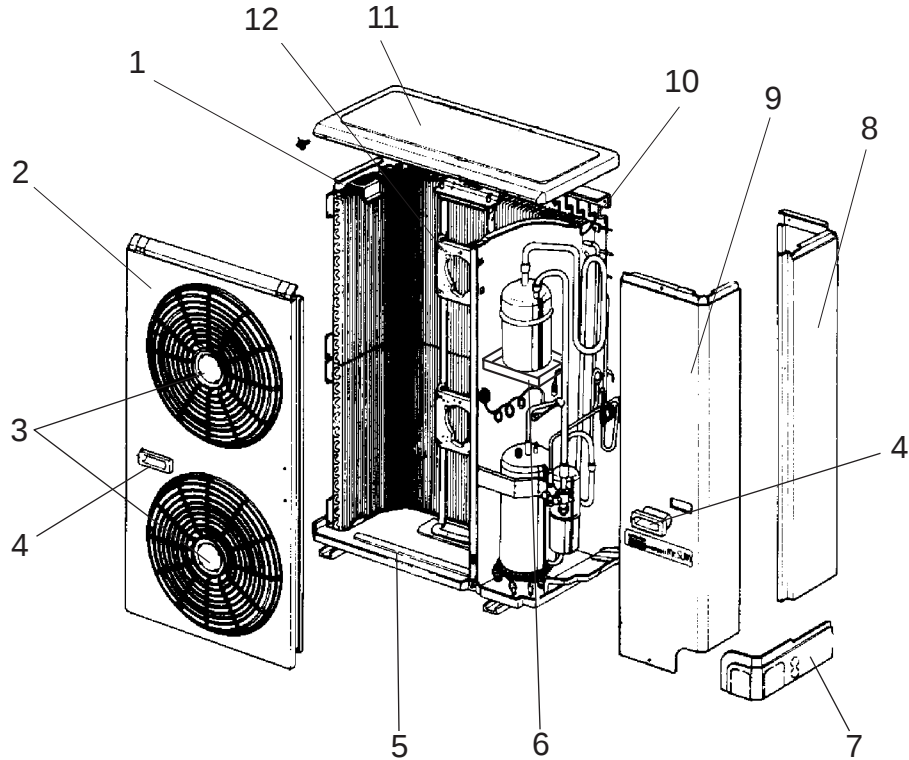
PU24EK₃ PU30EK₃



No.	Parts No.	Parts Name	Specifications	Q'ty / set			Remarks (Drawing No.)	Wiring Diagram Symbol
				PU24EK PU24EK ₁ PU24EK ₂	PU30EK PU30EK ₁ PU30EK ₂	PU24EK ₃ PU30EK ₃		
1	R01 A11 662	SIDE PANEL (LEFT)		1		1		
2	R01 A00 675	FAN GUARD		2		2		
3	R01 A00 655	PANEL HANDLE		3		3		
4	R01 A11 668	FRONT PANEL		1		1		
5	R01 A10 686	BASE ASSEMBLY		1		1		
6	T7W E00 529	DRAIN PAN				1		
7	R01 A11 661	SERVICE PANEL		1		1		
8	R01 A00 658	PANEL COVER		1		1		
9	R01 A11 682	REAR PANEL		1		1		
10	T7W E04 698	REAR GUARD		1		1		
11	T7W E02 641	TOP PANEL		1		1		
12	T7W E04 130	MOTOR SUPPORT		1		1		

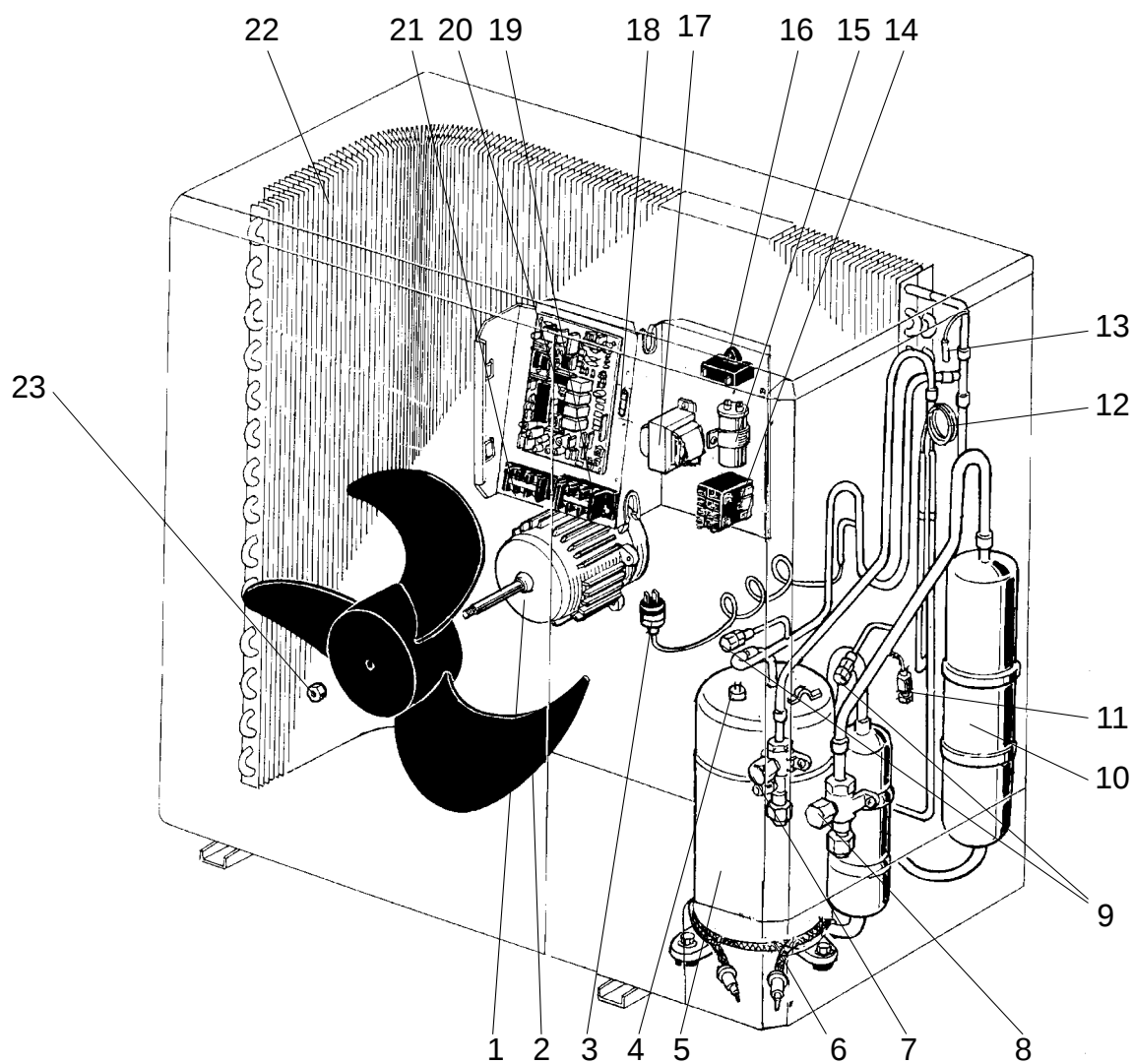
STRUCTURAL PARTS

PU36EK PU42EK2 PU42EK7
 PU36EK₁ PU42EK2₁ PU42EK7₁
 PU36EK₂ PU42EK7₂
 PU36EK₃



No.	Parts No.	Parts Name	Specifications	Q'ty / set					Remarks (Drawing No.)	Wiring Diagram Symbol
				36EK 36EK ₁ 36EK ₂	36EK ₃	42EK2 42EK2 ₁	42EK7 42EK7 ₁	42EK7 ₂		
1	R01 A14 662	SIDE PANEL (LEFT)		1	1	1	1	1		
2	R01 A14 668	FRONT PANEL		1	1	1	1	1		
3	R01 A00 675	FAN GUARD		2	2	2	2	2		
4	R01 A00 655	PANEL HANDLE		3	3	3	3	3		
5	R01 A14 686	BASE ASSEMBLY		1	1	1				
	R01 AK6 686	BASE ASSEMBLY					1	1		
6	T7W E17 529	DRAIN PAN			1			1		
7	R01 A14 658	PANEL COVER		1	1	1	1	1		
8	R01 A14 682	REAR PANEL		1	1	1	1	1		
9	R01 A14 661	SERVICE PANEL		1	1	1	1	1		
10	T7W E03 698	REAR GUARD		1	1	1	1	1		
11	R01 A14 641	TOP PANEL		1	1	1	1	1		
12	R01 85H 130	MOTOR SUPPORT		1	1					
	T7W E02 130	MOTOR SUPPORT				1	1	1		

FUNCTIONAL PARTS
PU12EK PU18EK
PU18EK₁



No.	Parts No.	Parts Name	Specifications	Q'ty / set			Remarks (Drawing No.)	Wiring Diagram Symbol
				PU				
				12EK	18EK	18EK1		
1	T7W 850 763	FAN MOTOR	S6V-85FPH	1	1	1		MF3,MF
2	R01 A00 115	PROPELLER		1	1	1		
3	T7W 850 208	HIGH PRESSURE SWITCH	OPEN psiG 469	1	1	1		63H2
4	T7W 966 238	OVERCURRENT RELAY	MRA-98880-9030	1				51C
	T7W 969 238	OVERCURRENT RELAY	MRA98881-093		1	1		51C
5	T97 665 600	COMPRESSOR	RH247NAB		1	1		MC
	T92 650 452	COMPRESSOR	RH167NAB	1				MC
6	T7W 850 236	CRANKCASE HEATER	240V 30W	1	1	1		CH
7	R01 943 410	BALL VALVE	3/8	1	1	1		
8	R01 951 411	BALL VALVE	5/8		1	1		
	R01 943 411	BALL VALVE	5/8	1				
9	R01 590 413	CHARGE PLUG		2	2	2		
10	R01 A00 440	ACCUMULATOR		1	1	1		
11	T7W 973 507	FUSIBLE PLUG		1	1	1		
12	T7W E07 425	CAPILLARY TUBE	0.126×0.071×31.5	1				
	R01 600 425	CAPILLARY TUBE	0.126×0.063×31.5		2	2		
13	R01 J07 202	OUTDOOR COIL THERMISTOR		1	1	1		TH3
14	T7W A30 708	CONTACTOR	S-U12UL 215VAC	1		1		52C
	T7W 651 215	CONTACTOR	VC-20F 230VAC		1			52C
15	T7W 969 723	COMPRESSOR CAPACITOR	30μF 380V		1	1		C
	T7W 966 723	COMPRESSOR CAPACITOR	25μF 370V	1				C
16	R01 576 255	FAN MOTOR CAPACITOR	3μF 440V		1	1		C3
	R01 A00 255	FAN MOTOR CAPACITOR	2.5μF 440V	1				C3
17	T7W A30 799	TRANSFORMER	RED :12.3VAC,0.06A BRN :12.3VAC,0.06A	1		1		T
	T7W 850 799	TRANSFORMER	RED :15.5VAC,0.2A BRN :11.5VAC,0.2A ORN :36.0VAC,0.02A		1			T
18	T7W 410 239	FUSE	250V 6A	1	1	1		F3<0.B>,F<0.B>
19	T7W 850 716	TERMINAL BLOCK	3P(L1,L2,GR)	1	1	1		TB1
20	T7W E08 315	OUTDOOR CONTROLLER BOARD		1		1		O.B
	T7W 850 315	OUTDOOR CONTROLLER BOARD			1			O.B
21	R01 556 246	TERMINAL BLOCK	2P(1,2)	1	1	1		TB3
22	R01 K91 408	OUTDOOR HEAT EXCHANGER			1	1		
	T7W 850 408	OUTDOOR HEAT EXCHANGER		1				
23	R01 30L 097	NUT		1	1	1		

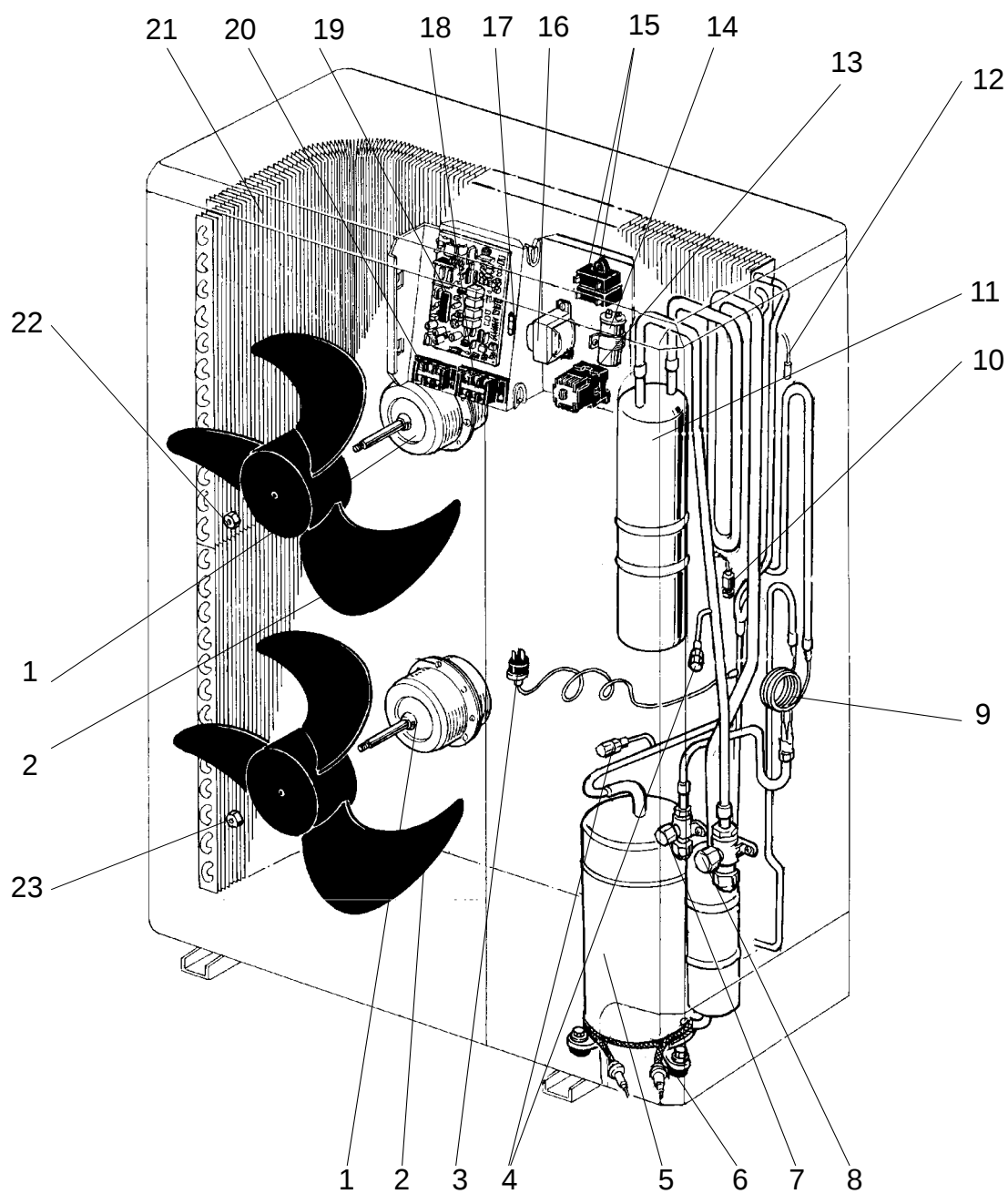
FUNCTIONAL PARTS

PU24EK

PU24EK₁

PU24EK₂

PU24EK₃





No.	Parts No.	Parts Name	Specifications	Q'ty / set			Remarks (Drawing No.)	Wiring Diagram Symbol
				PU				
				24EK	24EK ₁	24EK ₂ 24EK ₃		
1	T7W 851 763	FAN MOTOR	S6V-60FPN	2	2	2		MF3,4,1,2
2	R01 A00 115	PROPELLER		2	2	2		
3	T7W 850 208	HIGH PRESSURE SWITCH	OPEN psiG 363	1	1	1		63H2
4	R01 41L 413	CHARGE PLUG		2	2	2		
5	T97 517 300	COMPRESSOR	NH33NBD	1	1			MC
	T97 501 400	COMPRESSOR	NH33NBDT			1		MC
6	T7W 851 236	CRANKCASE HEATER	240V 43W	1	1	1		CH
7	R01 943 410	BALL VALVE	3/8	1	1	1		
8	R01 951 411	BALL VALVE	5/8	1	1	1		
9	T7W E17 425	CAPILLARY TUBE	0.126×0.063×17.3	2	2	2		
10	T7W 973 507	FUSIBLE PLUG		1	1	1		
11	R01 A12 440	ACCUMULATOR		1	1	1		
12	R01 J01 202	OUTDOOR COIL THERMISTOR		1	1	1		TH3
13	T7W A13 708	CONTACTOR	S-N25EX	1	1	1		52C
14	T7W 973 723	COMPRESSOR CAPACITOR	40μF 400V	1	1	1		C
15	R01 653 255	FAN MOTOR CAPACITOR	4μF 440V	2	2	2		C3, 4
16	T7W 850 799	TRANSFORMER	BRN: 11.5VAC, 0.2A RED: 15.5VAC, 0.2A ORN: 36.0VAC, 0.02A	1				T
	T7W E05 799	TRANSFORMER	RED: 12.3VAC, 0.06A BRN: 12.3VAC, 0.06A		1	1		T
17	T7W 410 239	FUSE	250V 6A	1	1	1		F3<0,B>,F<0,B>
18	T7W 850 716	TERMINAL BLOCK	3P(L1, L2, GR)	1	1	1		TB1
19	T7W 850 315	OUTDOOR CONTROLLER BOARD		1				O.B
	T7W E08 315	OUTDOOR CONTROLLER BOARD			1	1		O.B
20	R01 556 246	TERMINAL BLOCK	2P(1, 2)	1	1	1		TB3
21	R01 K92 408	OUTDOOR HEAT EXCHANGER		2	2	2		
22	R01 30L 097	NUT		2	2	2		

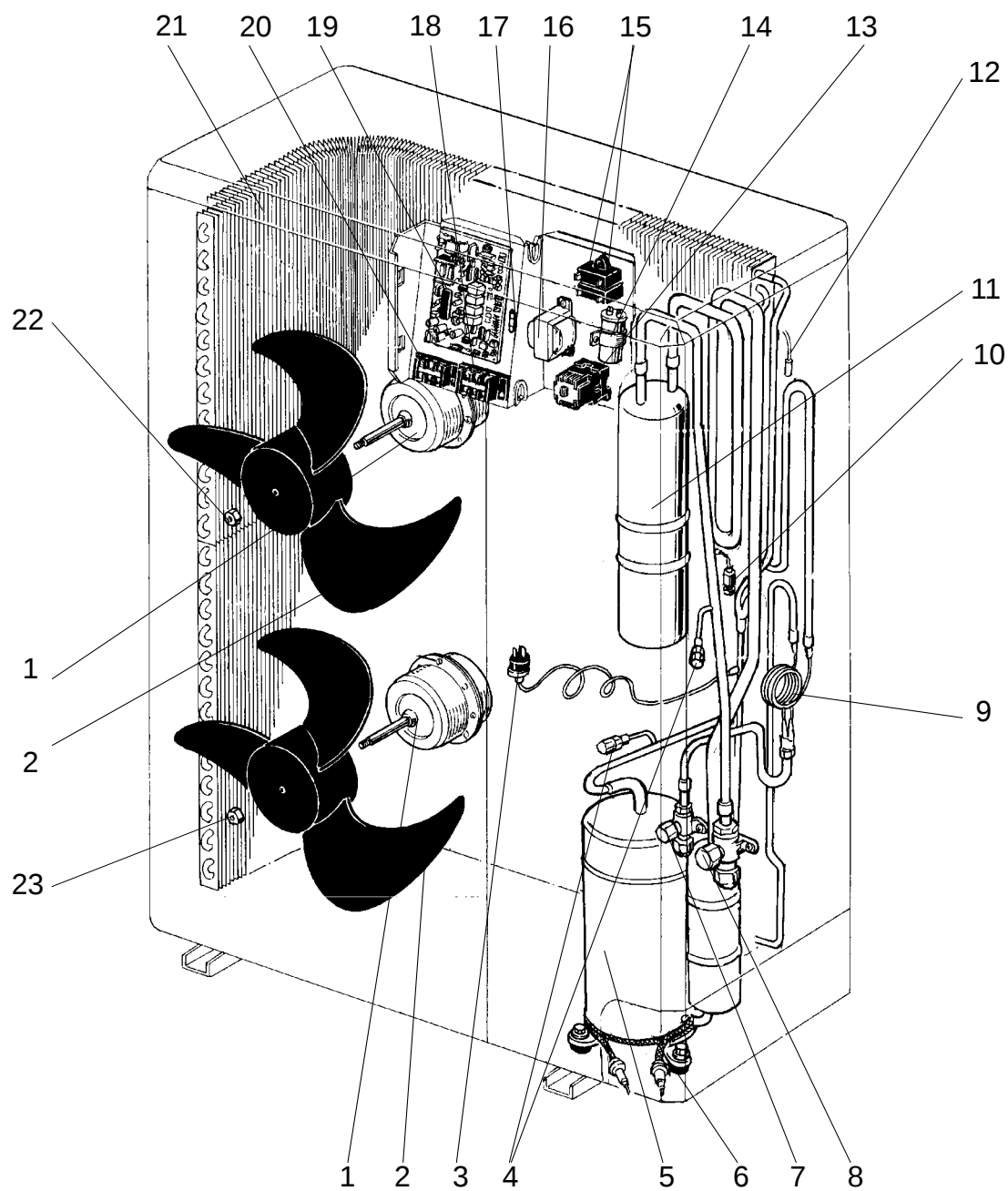
FUNCTIONAL PARTS

PU30EK

PU30EK₁

PU30EK₂

PU30EK₃



No.	Parts No.	Parts Name	Specifications	Q'ty / set			Remarks (Drawing No.)	Wiring Diagram Symbol
				PU				
				30EK	30EK ₁	30EK ₂ 30EK ₃		
1	T7W 851 763	FAN MOTOR	S6V-60FPN	2	2	2		MF3,4,1,2
2	R01 A00 115	PROPELLER		2	2	2		
3	T7W 850 208	HIGH PRESSURE SWITCH	OPEN psiG 363	1	1	1		63H2
4	R01 41L 413	CHARGE PLUG		2	2	2		
5	T97 511 300	COMPRESSOR	NH41NAD	1	1			MC
	T97 502 400	COMPRESSOR	NH41NAHT			1		MC
6	T7W 851 236	CRANKCASE HEATER	240V 43W	1	1	1		CH
7	R01 47L 410	BALL VALVE	1/2	1	1	1		
8	R01 670 411	BALL VALVE	3/4	1	1	1		
9	T7W E18 425	CAPILLARY TUBE	0.157×0.079×29.1	2	2	2		
10	T7W 973 507	FUSIBLE PLUG		1	1	1		
11	R01 A12 440	ACCUMULATOR		1	1	1		
12	R01 J01 202	OUTDOOR COIL THERMISTOR		1	1	1		TH3
13	T7W A13 708	CONTACTOR	S-N25EX	1	1	1		52C
14	T7W 867 723	COMPRESSOR CAPACITOR	50μF 400V	1	1	1		C
15	R01 653 255	FAN MOTOR CAPACITOR	4μF 440V	2	2	2		C3,4
16	T7W 850 799	TRANSFORMER	BRN: 11.5VAC, 0.2A RED: 15.5VAC, 0.2A ORN: 36.0VAC, 0.02A	1				T
	T7W E05 799	TRANSFORMER	RED: 12.3VAC, 0.06A BRN: 12.3VAC, 0.06A		1	1		T
17	T7W 410 239	FUSE	250V 6A	1	1	1		F3<0,B>F<0,B>
18	T7W 850 716	TERMINAL BLOCK	3P(L1,L2,GR)	1	1	1		TB1
19	T7W 850 315	OUTDOOR CONTROLLER BOARD		1				O.B
	T7W E08 315	OUTDOOR CONTROLLER BOARD			1	1		O.B
20	R01 556 246	TERMINAL BLOCK	2P(1,2)	1	1	1		TB3
21	T7W 412 408	OUTDOOR HEAT EXCHANGER		2	2	2		
22	R01 30L 097	NUT		2	2	2		

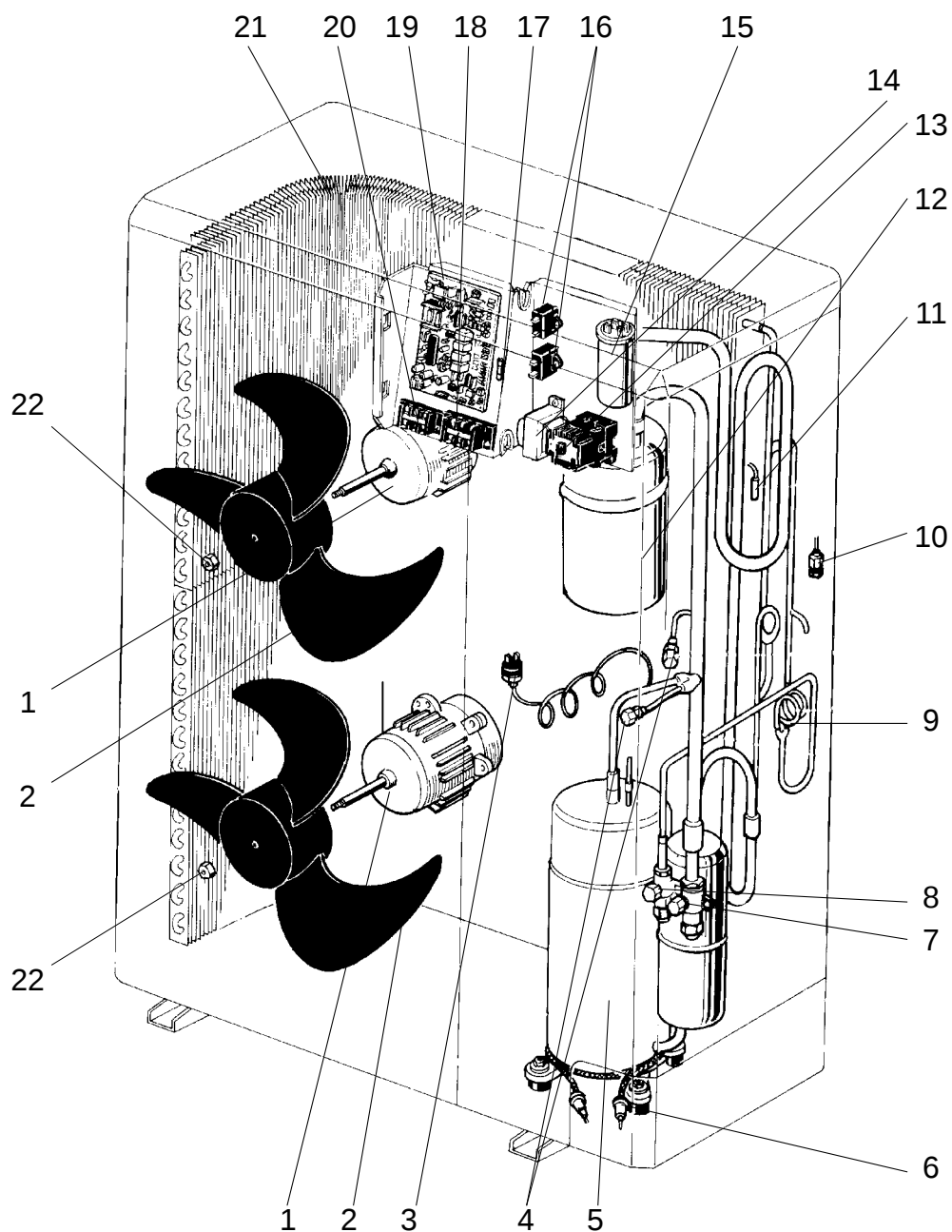
FUNCTIONAL PARTS

PU36EK

PU36EK₁

PU36EK₂

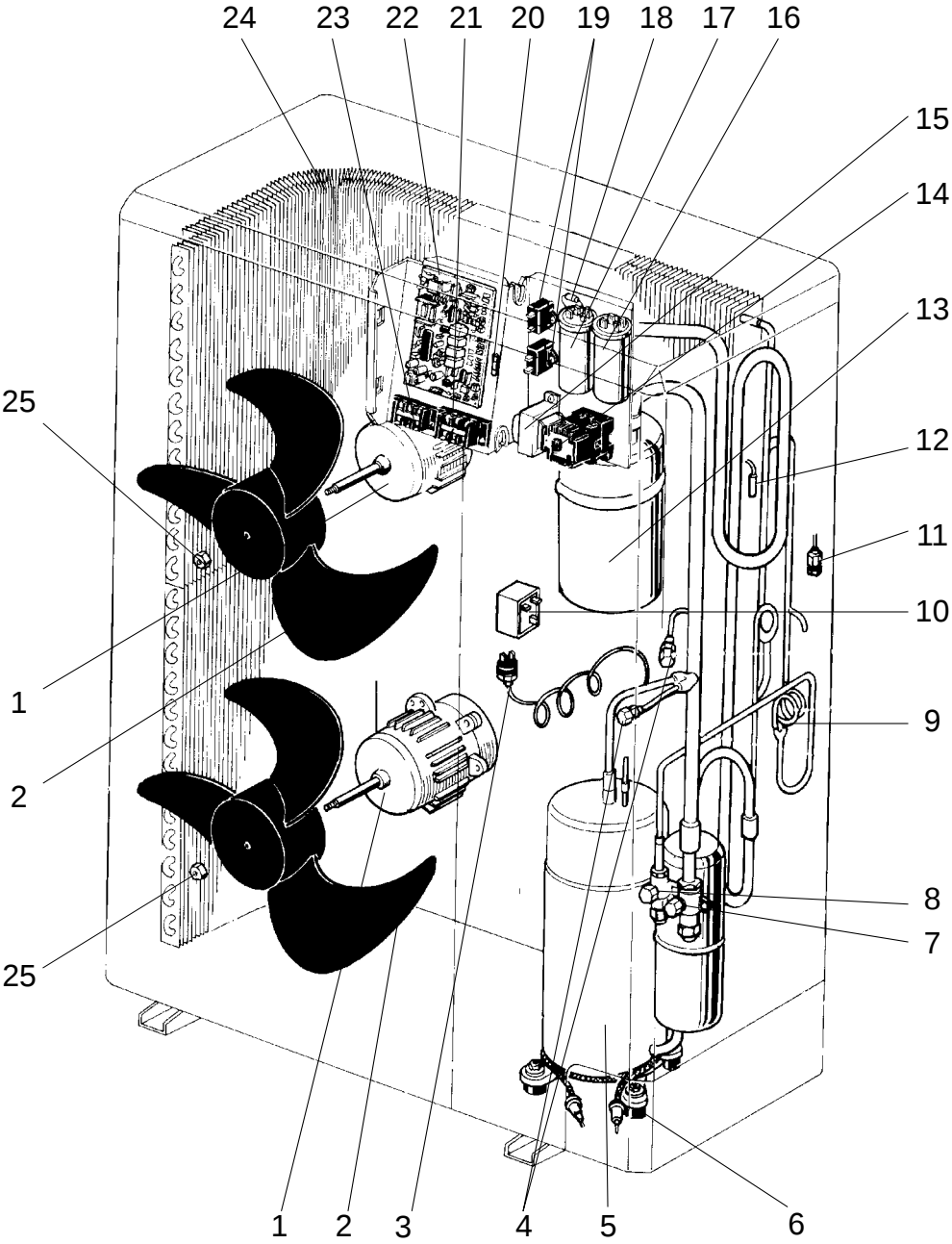
PU36EK₃





No.	Parts No.	Parts Name	Specifications	Q'ty / set			Remarks (Drawing No.)	Wiring Diagram Symbol
				PU				
				36EK	36EK ₁	36EK ₂ 36EK ₃		
1	T7W 852 763	FAN MOTOR	VC086DC	2	2	2		MF3,4,1,2
2	R01 A00 115	PROPELLER		2	2	2		
3	T7W 850 208	HIGH PRESSURE SWITCH	OPEN psiG 469	1	1	1		63H2
4	R01 41L 413	CHARGE PLUG		2	2	2		
5	T97 518 300	COMPRESSOR	NH47NAD	1	1			MC
	T97 503 400	COMPRESSOR	NH47NAHT			1		MC
6	T7W 851 236	CRANKCASE HEATER	240V 43W	1	1	1		CH
7	R01 670 411	BALL VALVE	3/4	1	1	1		
8	R01 47L 410	BALL VALVE	1/2	1	1	1		
9	T7W E06 425	CAPILLARY TUBE	0.157×0.079×17.7	2	2	2		
10	T7W 973 507	FUSIBLE PLUG		1	1	1		
11	T7W E24 202	OUTDOOR COIL THERMISTOR		1	1	1		TH3
12	T7W E01 440	ACCUMULATOR		1	1	1		
13	T7W A13 708	CONTACTOR	S-N25EX	1	1	1		52C
14	T7W E05 799	TRANSFORMER	RED:12.3VAC,0.06A BRN:12.3VAC,0.06A	1	1	1		T
15	T7W E02 723	COMPRESSOR CAPACITOR	60μF 360V	1	1	1		C
16	R01 576 255	FAN MOTOR CAPACITOR	3μF 440V	2	2	2		C3,4
17	T7W 410 239	FUSE	250V 6A	1	1	1		F3<0.B>,F<0.B>
18	T7W 850 716	TERMINAL BLOCK	3P(L1,L2,GR)	1	1	1		TB1
	T7W 850 315	OUTDOOR CONTROLLER BOARD		1				O.B
19	T7W E08 315	OUTDOOR CONTROLLER BOARD			1	1		O.B
20	R01 556 246	TERMINAL BLOCK	2P(1,2)	1	1	1		TB3
21	T7W E24 408	OUTDOOR HEAT EXCHANGER		2	2	2		
22	R01 30L 097	NUT		2	2	2		

FUNCTIONAL PARTS
PU42EK2
PU42EK2₁



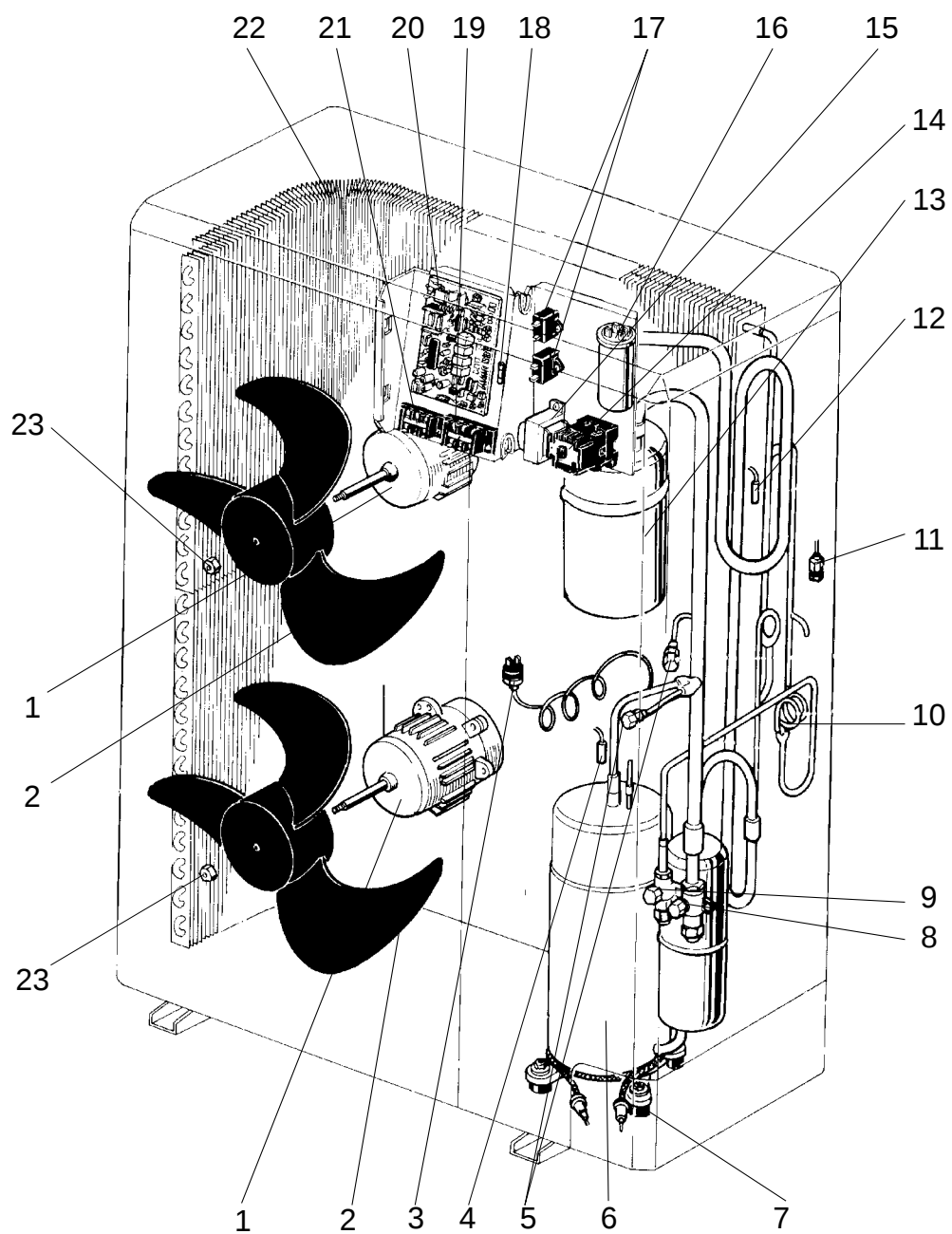
No.	Parts No.	Parts Name	Specifications	Q'ty / set		Remarks (Drawing No.)	Wiring Diagram Symbol
				PU			
				42EK2	42EK2 ₁		
1	T7W 853 763	FAN MOTOR	PA6N100UG	2	2		MF3,4,1,2
2	R01 A00 115	PROPELLER		2	2		
3	T7W 850 208	HIGH PRESSURE SWITCH	OPEN psiG 469	1	1		63H2
4	R01 41L 413	CHARGE PLUG		2	2		
5	T97 513 300	COMPRESSOR	NH569NXA	1	1		MC
6	T7W 851 236	CRANKCASE HEATER	240V 43W	1	1		CH
7	R01 670 411	BALL VALVE	3/4	1	1		
8	R01 47L 410	BALL VALVE	1/2	1	1		
9	R01 442 425	CAPILLARY TUBE	0.157×0.079×7.1	2	2		
10	T7W A34 704	COMPRESSOR START RELAY	AMVL320B	1	1		19
11	T7W 973 507	FUSIBLE PLUG		1	1		
12	T7W E24 202	OUTDOOR COIL THERMISTOR		1	1		TH3
13	T7W E01 440	ACCUMULATOR		1	1		
14	T7W 868 708	CONTACTOR	S-K35UR	1	1		52C
15	T7W E05 799	TRANSFORMER	RED:12.3VAC,0.06A BRN:12.3VAC,0.06A	1	1		T
16	T7W A34 723	COMPRESSOR CAPACITOR	65μF 400V	1	1		C
17	T7W 853 723	COMPRESSOR START CAPACITOR	65μF 400V	1	1		C5
18	T7W A34 234	RESISTOR	15K 4W	1	1		R
19	R01 653 255	FAN MOTOR CAPACITOR	4μF 440V	2	2		C3,4
20	T7W 410 239	FUSE	250V 6A	1	1		F3<0.B>,F<0.B>
21	T7W 850 716	TERMINAL BLOCK	3P(L1,L2,GR)	1	1		TB1
22	T7W 850 315	OUTDOOR CONTROLLER BOARD		1			O.B
	T7W E08 315	OUTDOOR CONTROLLER BOARD			1		O.B
23	R01 556 246	TERMINAL BLOCK	2P(1,2)	1	1		TB3
24	R01 V29 408	OUTDOOR HEAT EXCHANGER		2	2		
25	R01 30L 097	NUT		2	2		

FUNCTIONAL PARTS

PU42EK7

PU42EK7₁

PU42EK7₂





No.	Parts No.	Parts Name	Specifications	Q'ty / set		Remarks (Drawing No.)	Wiring Diagram Symbol
				PU			
				42EK7	42EK7 ₁ 42EK7 ₂		
1	T7W 853 763	FAN MOTOR	PA6N100UG	2	2		MF1, 2
2	R01 A00 115	PROPELLER		2	2		
3	T7W 850 208	HIGH PRESSURE SWITCH	OPEN psiG 469	1	1		63H2
4	R01 86H 201	DISCHARGE THERMAL SWITCH		1	1		26C
5	R01 41L 413	CHARGE PLUG		2	2		
6	T97 513 500	COMPRESSOR	ZR42K3PFV	1	1		MC
7	T7W 851 236	CRANKCASE HEATER	240V 43W	1	1		CH
8	R01 670 411	BALL VALVE	3/4	1	1		
9	R01 47L 410	BALL VALVE	1/2	1	1		
10	T7W E10 425	CAPILLARY TUBE	0.157×0.079×21.7	2	2		
11	T7W 973 507	FUSIBLE PLUG		1	1		
12	T7W E24 202	OUTDOOR COIL THERMISTOR		1	1		TH3
13	T7W E01 440	ACCUMULATOR		1	1		
14	T7W A14 708	CONTACTOR	S-N35EX	1			52C
	T7W E07 708	CONTACTOR	MSO-N25KF		1		51C, 52C
15	T7W E05 799	TRANSFORMER	RED:12.3VAC,0.06A BRN:12.3VAC,0.06A	1	1		T
16	T7W E02 723	COMPRESSOR CAPACITOR	60μF 380V	1	1		C
17	R01 653 255	FAN MOTOR CAPACITOR	4μF 440V	2	2		C3,4
18	T7W 410 239	FUSE	250V 6A	1	1		F3<0.B>,F<0.B>
19	T7W 850 716	TERMINAL BLOCK	3P(L1,L2,GR)	1	1		TB1
20	T7W E08 315	OUTDOOR CONTROLLER BOARD		1			O.B
	T7W E15 315	OUTDOOR CONTROLLER BOARD			1		O.B
21	R01 556 246	TERMINAL BLOCK	2P(1,2)	1	1		TB3
22	T7W E07 408	OUTDOOR HEAT EXCHANGER		2	2		
23	R01 30L 097	NUT		2	2		

Mr.SLIM™



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