



F R I E D R I C H

SPLIT TYPE
ROOM AIR CONDITIONER
CEILING TYPE (60Hz)

SERVICE MANUAL

Indoor unit Outdoor unit
MS36Y3F MR36Y3F

CONTENTS

| | |
|-----------------------------------|----|
| SPECIFICATIONS | 1 |
| OUTLINE AND DIMENSIONS | 2 |
| REFRIGERANT SYSTEM DIAGRAM | 4 |
| CIRCUIT DIAGRAM | 5 |
| INDOOR PCB CIRCUIT DIAGRAM | 7 |
| OUTDOOR PCB CIRCUIT DIAGRAM | 8 |
| ERROR CONTENTS | 11 |
| DISASSEMBLY ILLUSTRATION | 13 |
| PARTS LIST | 21 |
| ACCESSORIES | 23 |

SPECIFICATIONS

ELECTRICAL DATA

| | | |
|------------------|---------|--------------------------------------|
| TYPE | | COOLING & HEATING |
| INDOOR UNIT | | MS36Y3F |
| OUTDOOR UNIT | | MR36Y3F |
| COOLING CAPACITY | | 34,100 BTU/h / 33,500 BTU/h |
| HEATING CAPACITY | | 38,200 BTU/h / 37,600 BTU/h |
| POWER SOURCE | | 230 V / 208 V |
| FREQUENCY | | 1∅ 60Hz |
| RUNNING CURRENT | COOLING | 18.3 A / 19.5 A |
| | HEATING | 15.3 A / 16.9 A |
| INPUT WATTS | COOLING | 4.22 kW / 4.08 kW |
| | HEATING | 3.50 kW / 3.50 kW |
| E.E.R. | COOLING | 2.37 kW/kW / 2.40 kW/kW |
| | HEATING | 3.06 kW/kW / 3.06 kW/kW |
| MOISTURE REMOVAL | | 7.4 Pts/h (3.5 L/hr) |
| AIR CIRCULATION | | 1,088 cfm (1,850 m ³ /hr) |

FAN MOTOR

| | | |
|--------------|----------------|---------------------------------------|
| POWER SOURCE | | 230 V |
| INDOOR UNIT | Discrimination | MFA-45DZM |
| | High speed | Cool 1,100 r.p.m. / Heat 1,100 r.p.m. |
| | Middle speed | Cool 1,000 r.p.m. / Heat 900 r.p.m. |
| | Low speed | Cool 850 r.p.m. / Heat 750 r.p.m. |
| OUTDOOR UNIT | Discrimination | MFE-45ROM |
| | High speed | Cool 850 r.p.m. / Heat 900 r.p.m. |

COMPRESSOR AND REFRIGERANT

| | | |
|-------------------|---------------------------|--|
| TYPE | | Hermetic type, 4 poles, Inverter, Twin rotary |
| DISCRIMINATION | | TNB220FPBM9 |
| REFRIGERANT | | 4 lb 14 oz (2,200g) |
| FULL CHARGE | Pipe length 49 ft. (15 m) | 4 lb 14 oz (2,200 g) |
| | 66 ft. (20 m) | 5 lb 5 oz (2,400 g) |
| | 98 ft. (30 m) | 6 lb 3 oz (2,800 g) |
| | 131 ft. (40 m) | 7 lb 1 oz (3,200 g) |
| | 164 ft. (50 m) | 7 lb 15 oz (3,600 g) |
| ADDITIONAL CHARGE | | 0.43 oz / ft. (40 g / m) |

DIMENSIONS

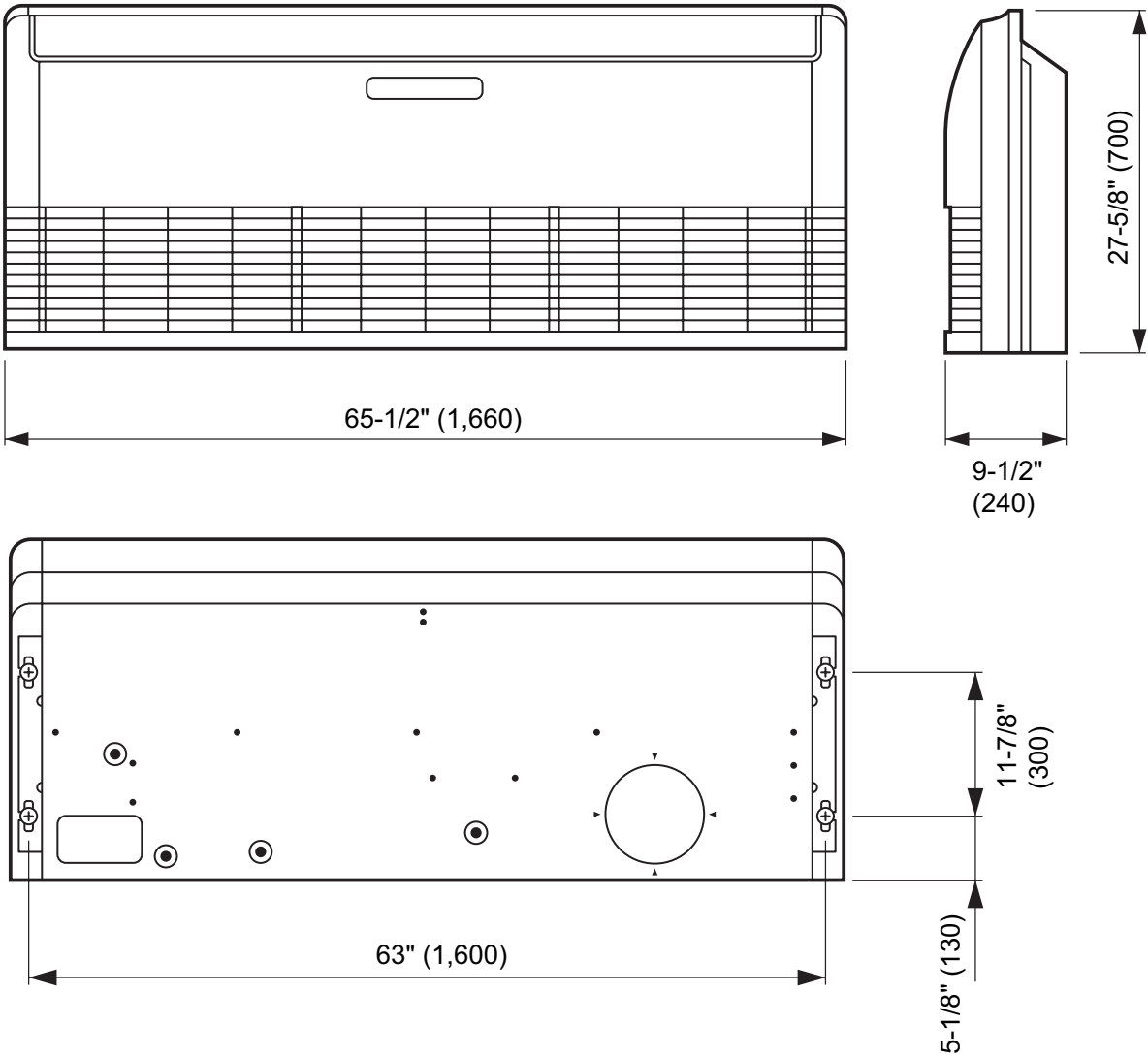
| | | |
|--------------|-----------|---|
| INDOOR UNIT | H x W x D | 9-1/2" x 65-1/2" x 27-5/8" inch 240 x 1,660 x 700 mm |
| OUTDOOR UNIT | H x W x D | 32-3/4" x 35-1/2" x 13" inch 830 x 900 x 330 mm |

WEIGHT

| | | |
|--------------|-------------|---------------------------------|
| INDOOR UNIT | Net / Gross | 106 lb / 135 lb (48 kg / 61 kg) |
| OUTDOOR UNIT | Net / Gross | 141 lb / 154 lb (64 kg / 70 kg) |

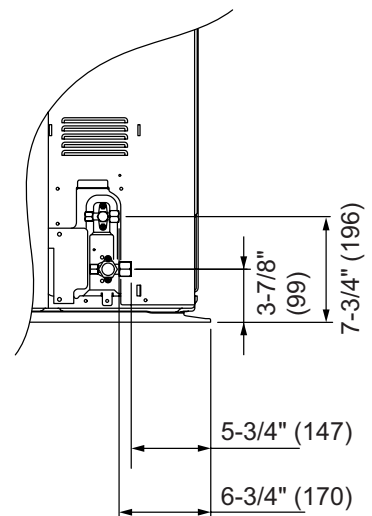
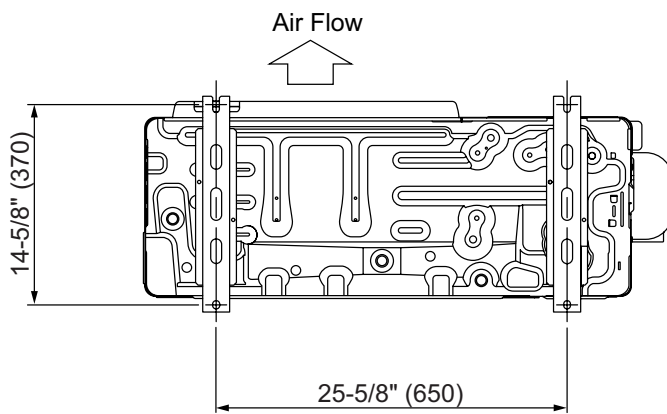
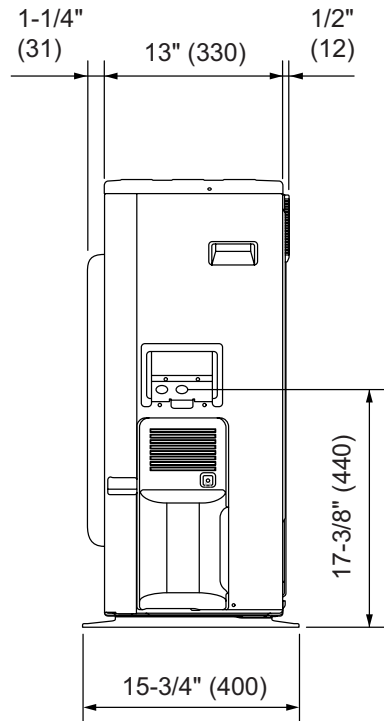
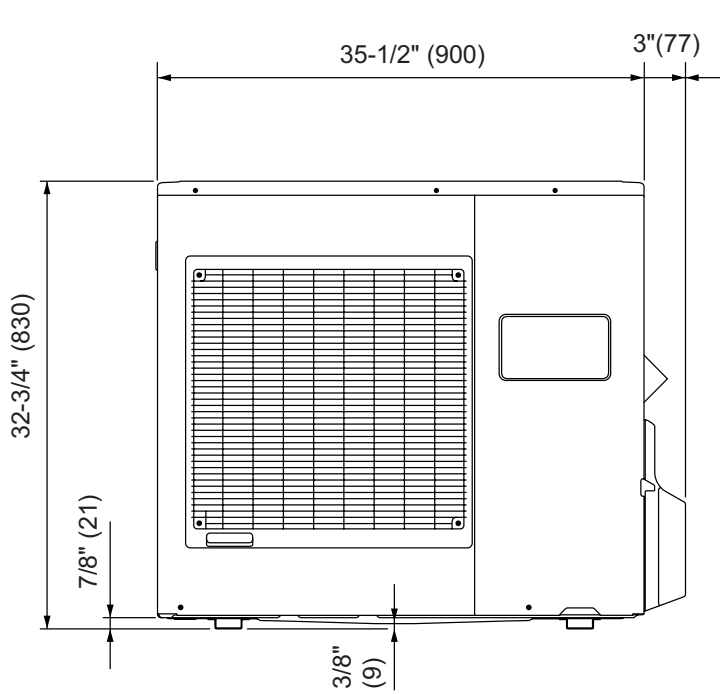
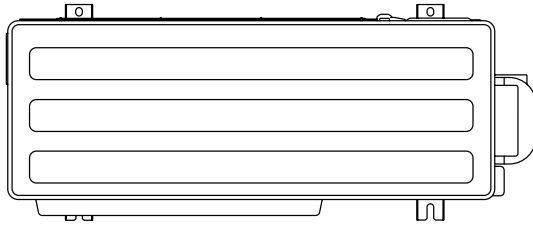
OUTLINE AND DIMENSIONS

INDOOR UNIT
Unit : inch (mm)

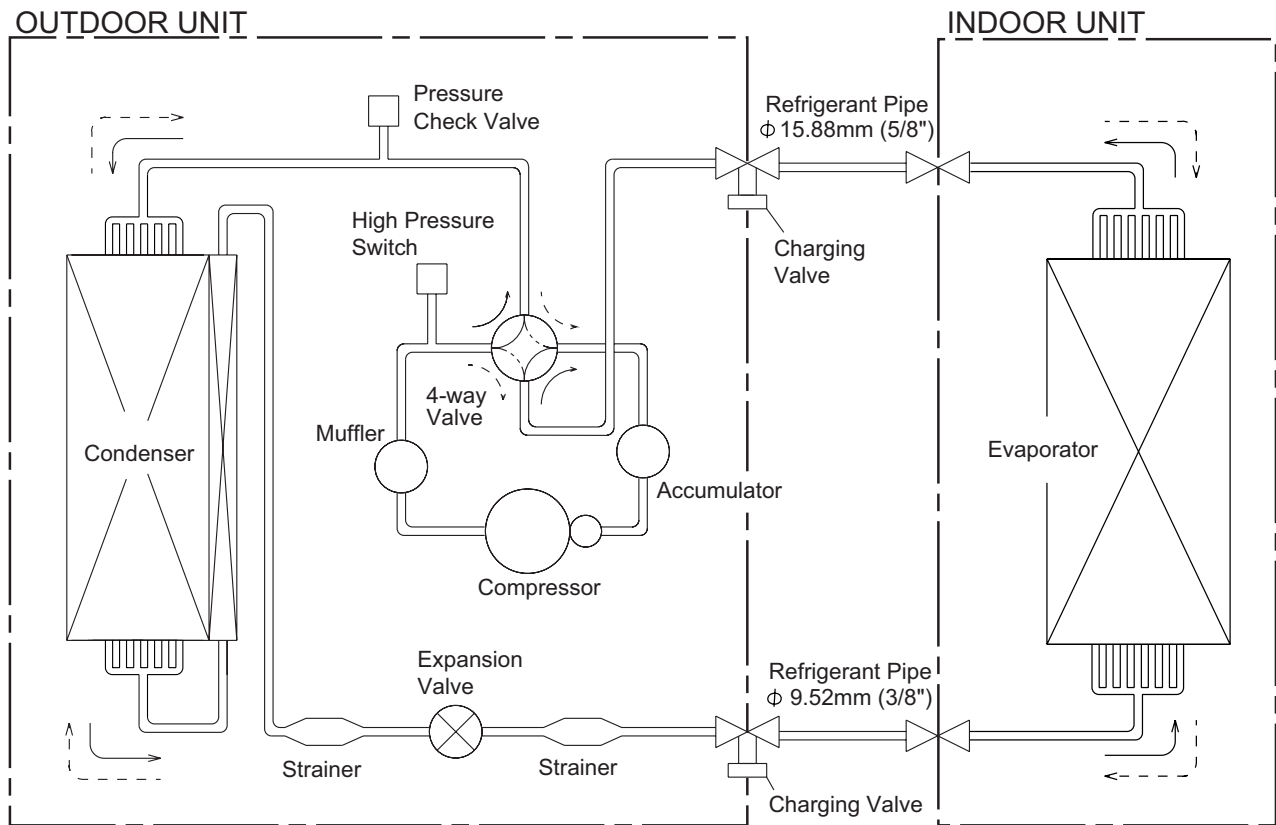


OUTDOOR UNIT

Unit : inch (mm)



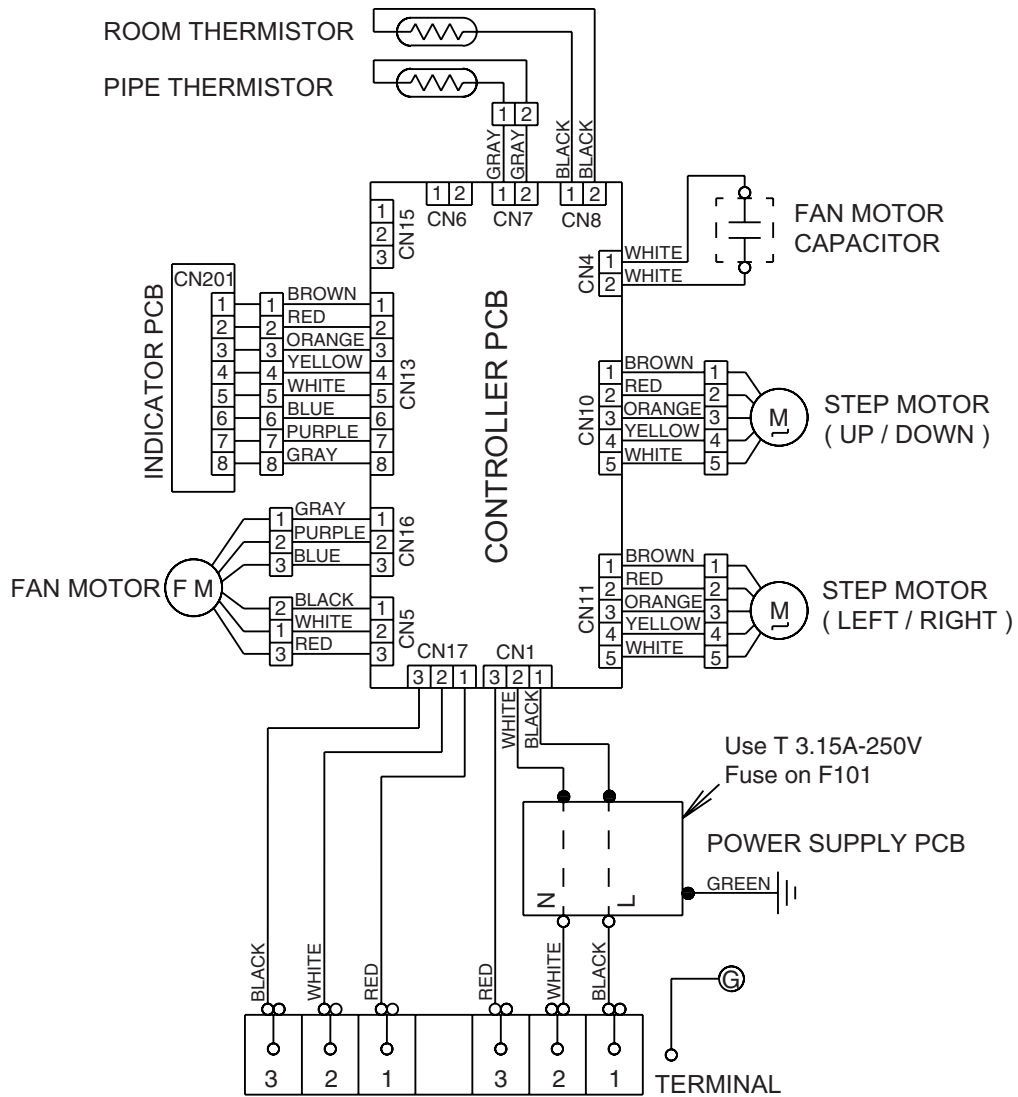
REFRIGERANT SYSTEM DIAGRAM



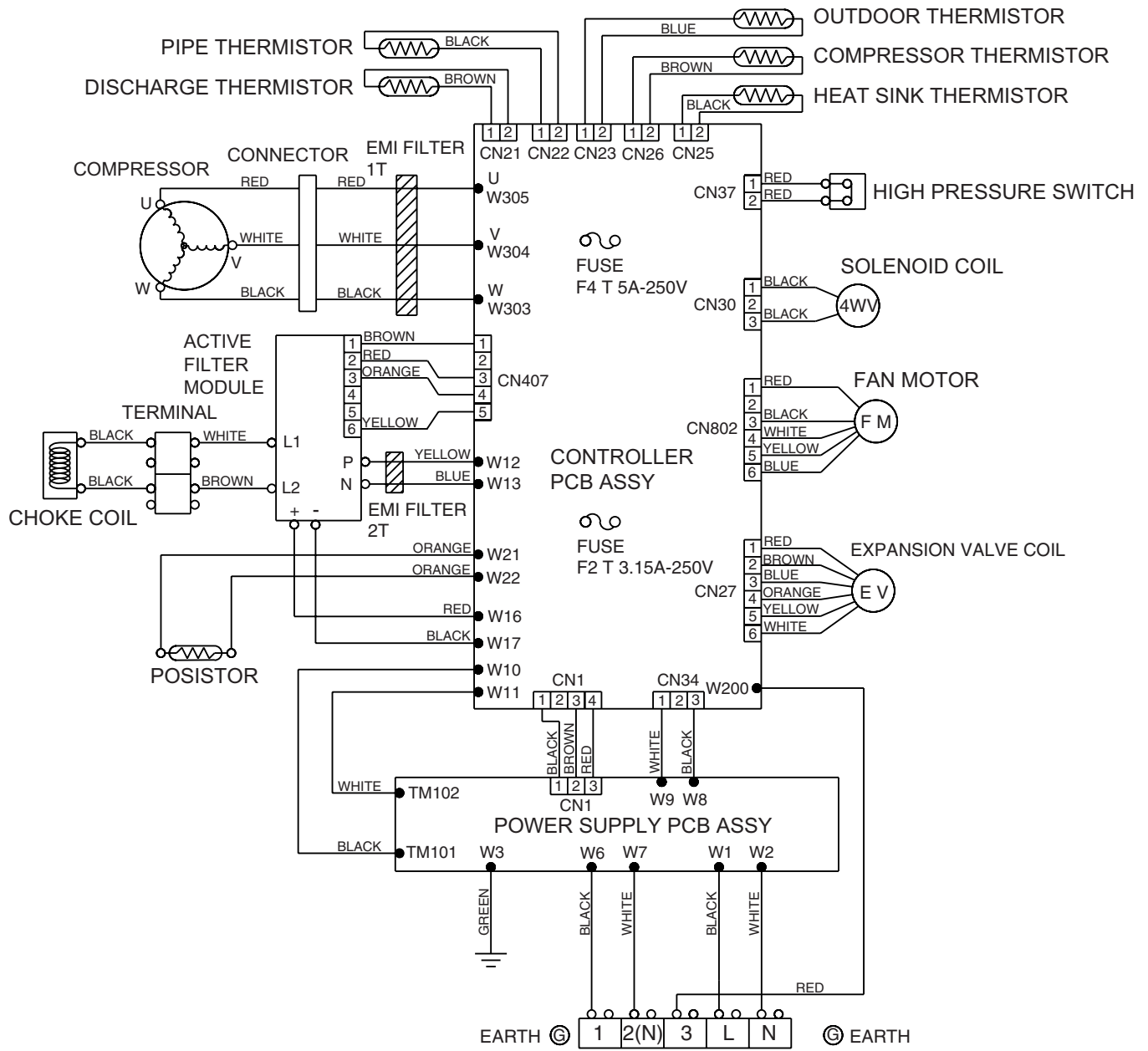
→ : COOL
 ---> : HEAT

CIRCUIT DIAGRAM

INDOOR UNIT

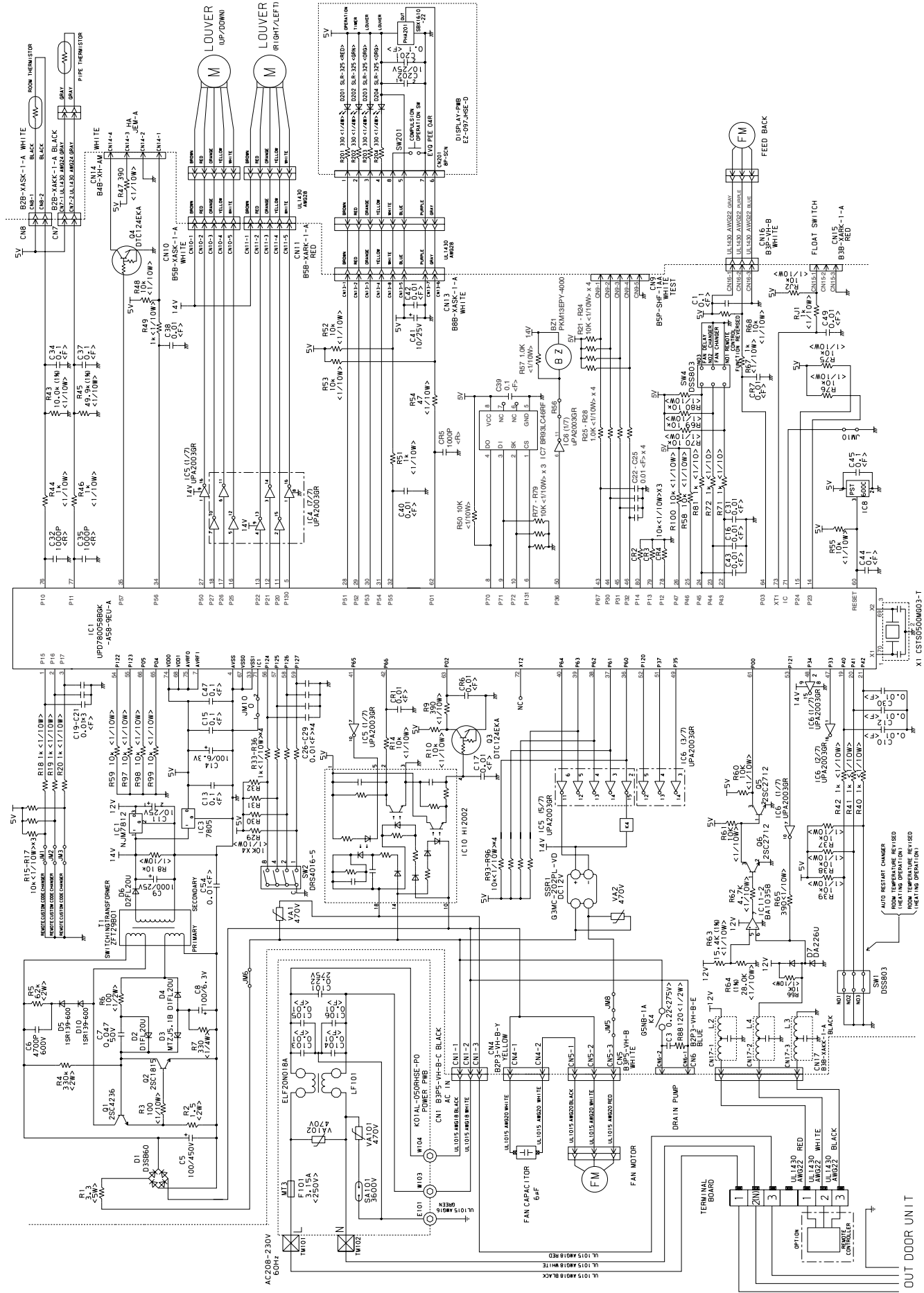


OUTDOOR UNIT



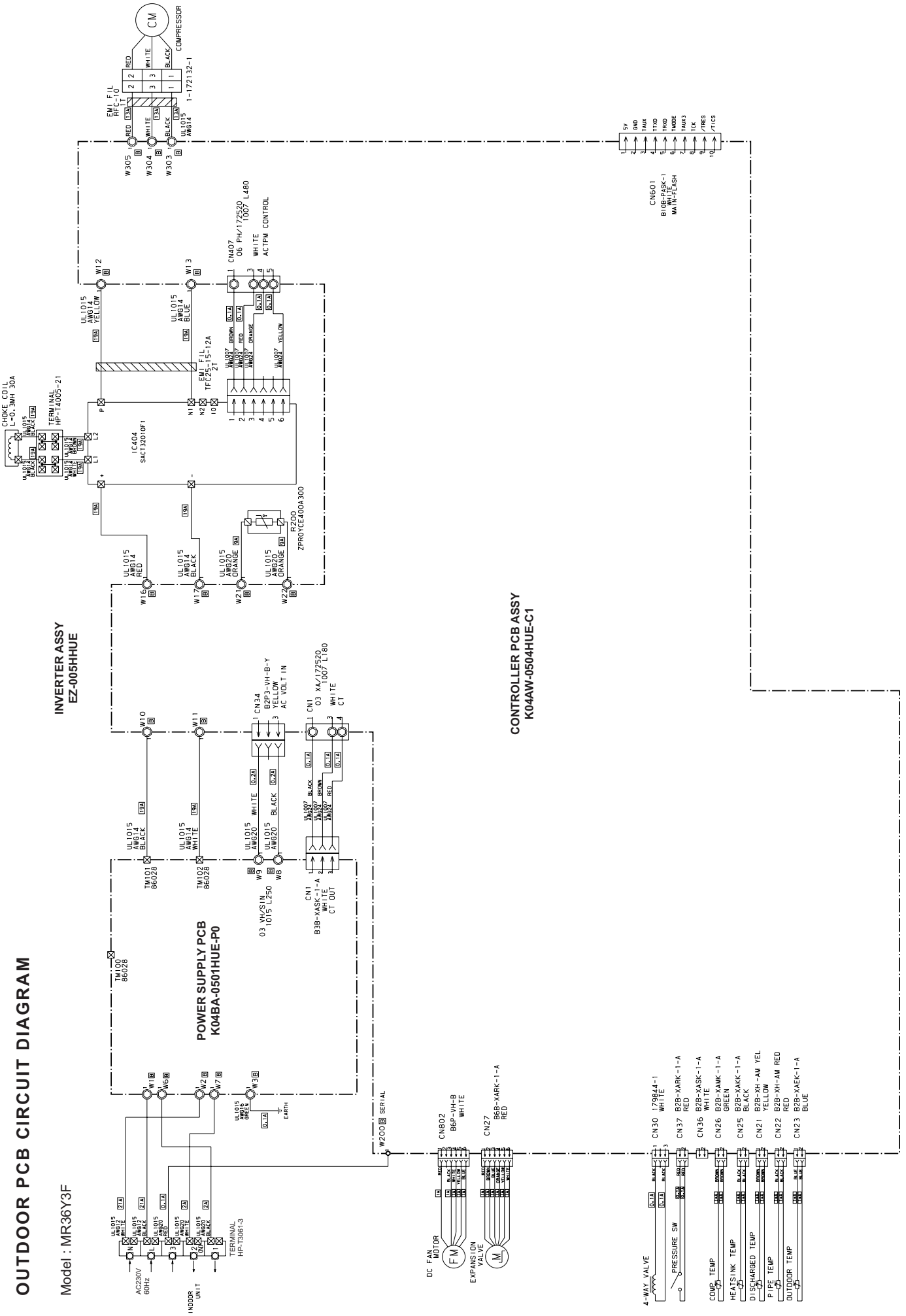
INDOOR PCB CIRCUIT DIAGRAM

CONTROLLER PCB ASSEMBLY K01AL-050RHSE-C1



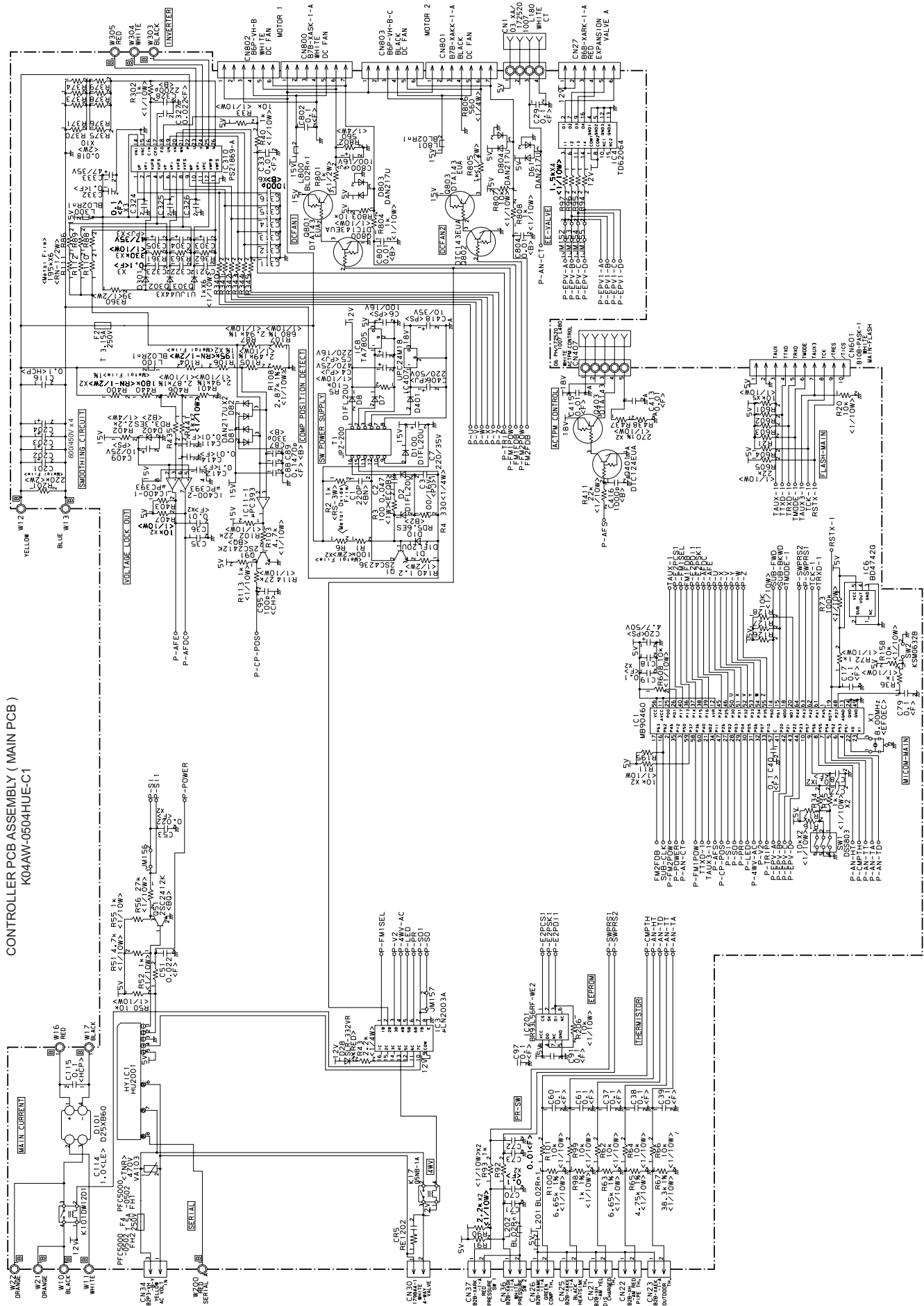
OUTDOOR PCB CIRCUIT DIAGRAM

Model : MR36Y3F



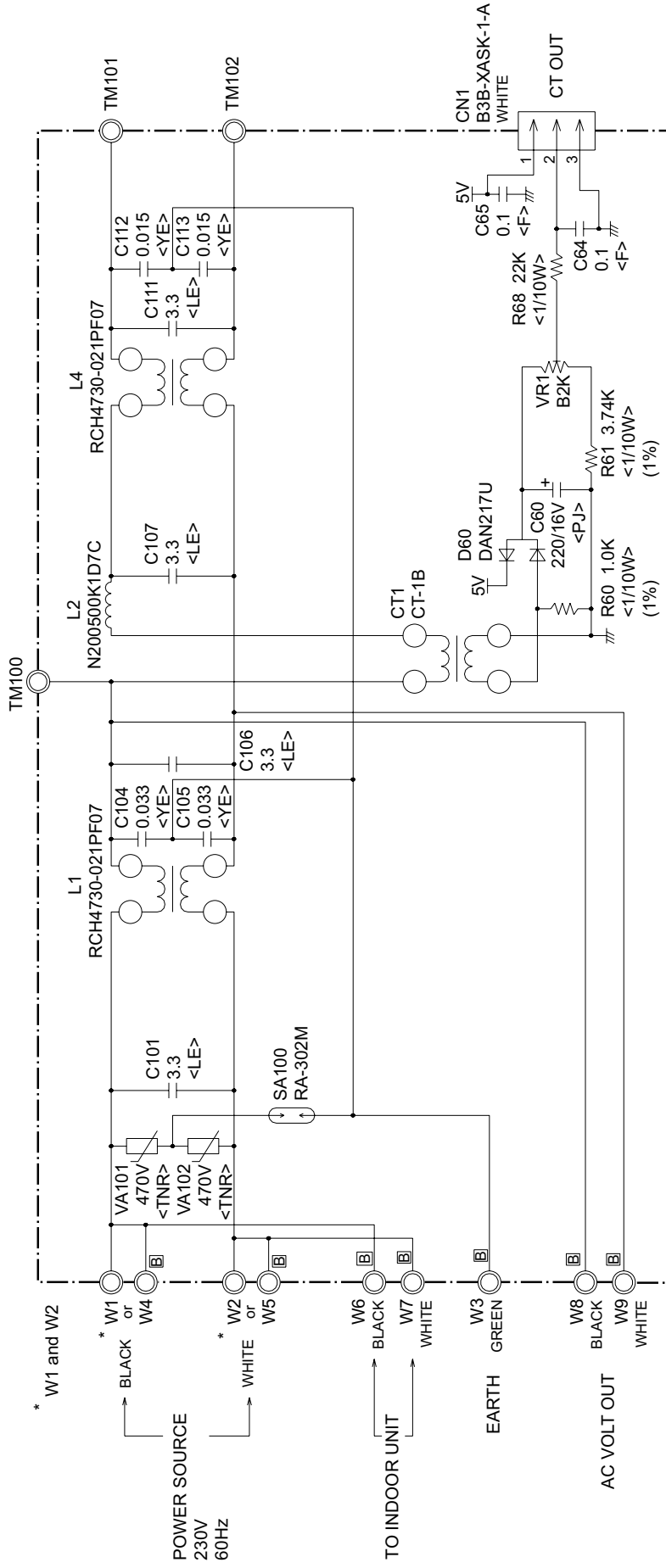
Model : MR36Y3F

CONTROLLER PCB ASSEMBLY (MAIN PCB)
K04AW-0504HUE-C1



Model : MR36Y3F

POWER SUPPLY PCB ASSEMBLY
K04BA-0501HUE-P0

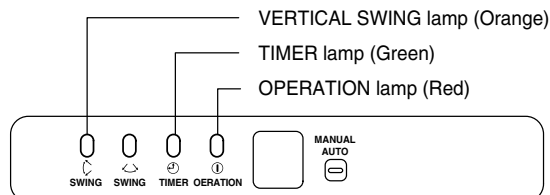


ERROR CONTENTS

(Indoor unit)

Operation can be checked by lighting and flashing of the display section OPERATION, TIMER, and VERTICAL SWING lamps.

Perform judgment in accordance with the following.



TEST RUNNING

When the air conditioner is run by pressing the remote control unit test run button, the OPERATION, TIMER, and VERTICAL SWING lamps flash slowly at the same time.

ERROR

The OPERATION, TIMER, and VERTICAL SWING lamps operate as follows according to the error contents.

| OPERATION lamp (RED) | TIMER lamp (GREEN) | SWING lamp (ORANGE) | Error contents |
|----------------------|--------------------|---------------------|---|
| ○ | ○ | × | Indoor EEPROM abnormal |
| ○ | ○ | ○ | Outdoor EEPROM abnormal |
| (2 times) ● | ○ | × | Indoor room temperature sensor open |
| (2 times) ● | ○ | ○ | Indoor room temperature sensor shortcircuited |
| (3 times) ● | ○ | × | Indoor heat exchanger temperature sensor open |
| (3 times) ● | ○ | ○ | Indoor heat exchanger temperature sensor shortcircuited |
| (4 times) ● | ○ | × | Float switch operated |
| (5 times) ● | ○ | × | Indoor signal abnormal |
| (5 times) ● | ○ | ○ | Outdoor signal abnormal |
| (6 times) ● | ○ | × | Indoor fan abnormal |
| ○ | (2 times) ● | × | Outdoor power source connection abnormal |
| ○ | (3 times) ● | × | Outdoor heat exchanger temperature sensor open |
| ○ | (3 times) ● | ○ | Outdoor heat exchanger temperature sensor shortcircuited |
| ○ | (4 times) ● | × | Outdoor temperature sensor open |
| ○ | (4 times) ● | ○ | Outdoor temperature sensor shortcircuited |
| ○ | (5 times) ● | × | Outdoor discharge pipe temperature sensor or compressor temperature sensor open |
| ○ | (5 times) ● | ○ | Outdoor discharge pipe temperature sensor or compressor temperature sensor shortcircuited |
| ○ | (6 times) ● | × | Outdoor high pressure abnormal |
| ○ | (7 times) ● | × | Outdoor discharge pipe temperature or compressor temperature sensor abnormal |

○ : 0.1s ON/0.1s OFF (flash) × : OFF

● : 0.5s ON/0.5s OFF (flash)

ERROR CONTENTS (outdoor unit)

1. Make a TEST RUN in accordance with the installation instruction sheet for the indoor unit.

2. OUTDOOR UNIT LEDS

When a malfunction occurs in the outdoor unit, the LED on the circuit board lights to indicate the error. Refer to the following table for the description of each error according to the LED.

| LED | Error contents |
|----------|--|
| 1 flash | Communication error (Indoor unit - Outdoor unit) |
| 2 flash | Discharge pipe temperature sensor |
| 3 flash | Outdoor heat exchanger temperature sensor |
| 4 flash | Outdoor temperature sensor |
| 7 flash | Compressor temperature sensor |
| 8 flash | Heat sink temperature sensor |
| 9 flash | Pressure switch abnormal |
| 12 flash | IPM error |
| 13 flash | Compressor rotor position cannot detect |
| 14 flash | Compressor cannot operate |
| 15 flash | Outdoor fan abnormal (upper fan) |
| 16 flash | Outdoor fan abnormal (lower fan) |
| lighting | No error |

SPECIAL INSTALLATION SETTING

PUMP DOWN (Refrigerant collecting operation)

Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

1. When the product is stopped:

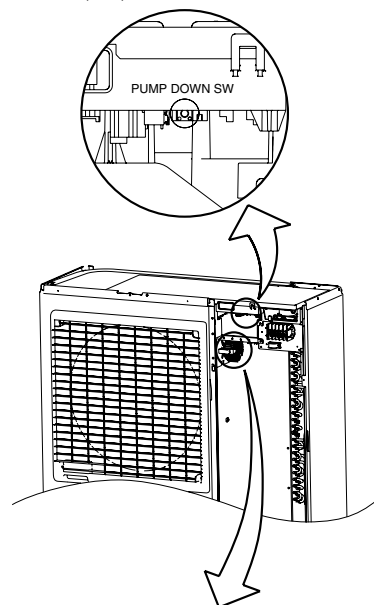
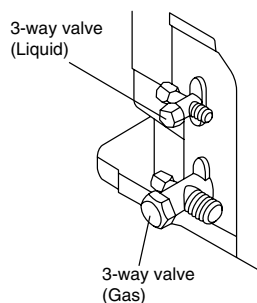
| | |
|---|--|
| ① | Press the PUMP DOWN switch on the outdoor unit. (The LED on the outdoor unit circuit board lights.) |
| ② | The pump down operation (cooling operation) begins right away. After operation starts, close the three-way valve (liquid). |
| ③ | After 2 - 3 minutes, operation stops. Close the three-way valve (gas) within one minute after operations stops. |
| ④ | The LED will go out three minutes after it stops. Disconnect the power supply after confirming that the LED has gone out. |

2. When the product is operating:

| | |
|---|---|
| ① | Press the PUMP DOWN switch on the outdoor unit. The LED on the outdoor unit circuit board lights, and operation stops. At this point, recovery has not been completed, so do not close the two- and three-way valves. |
| ② | The pump down operation (cooling operation) begins after three minutes. Close the three-way valve (liquid) after operation starts. |
| ③ | After 2 - 3 minutes, operation stops. Close the three-way valve (gas) within one minute after operations stops. |
| ④ | The LED will go out three minutes after it stops. Disconnect the power supply after confirming that the LED has gone out. |

*When the pump down operation is repeated, temporarily disconnect the power supply after opening the closed valves (both liquid and gas). Reconnect the power supply after 2 - 3 minutes and perform the pump down operation.

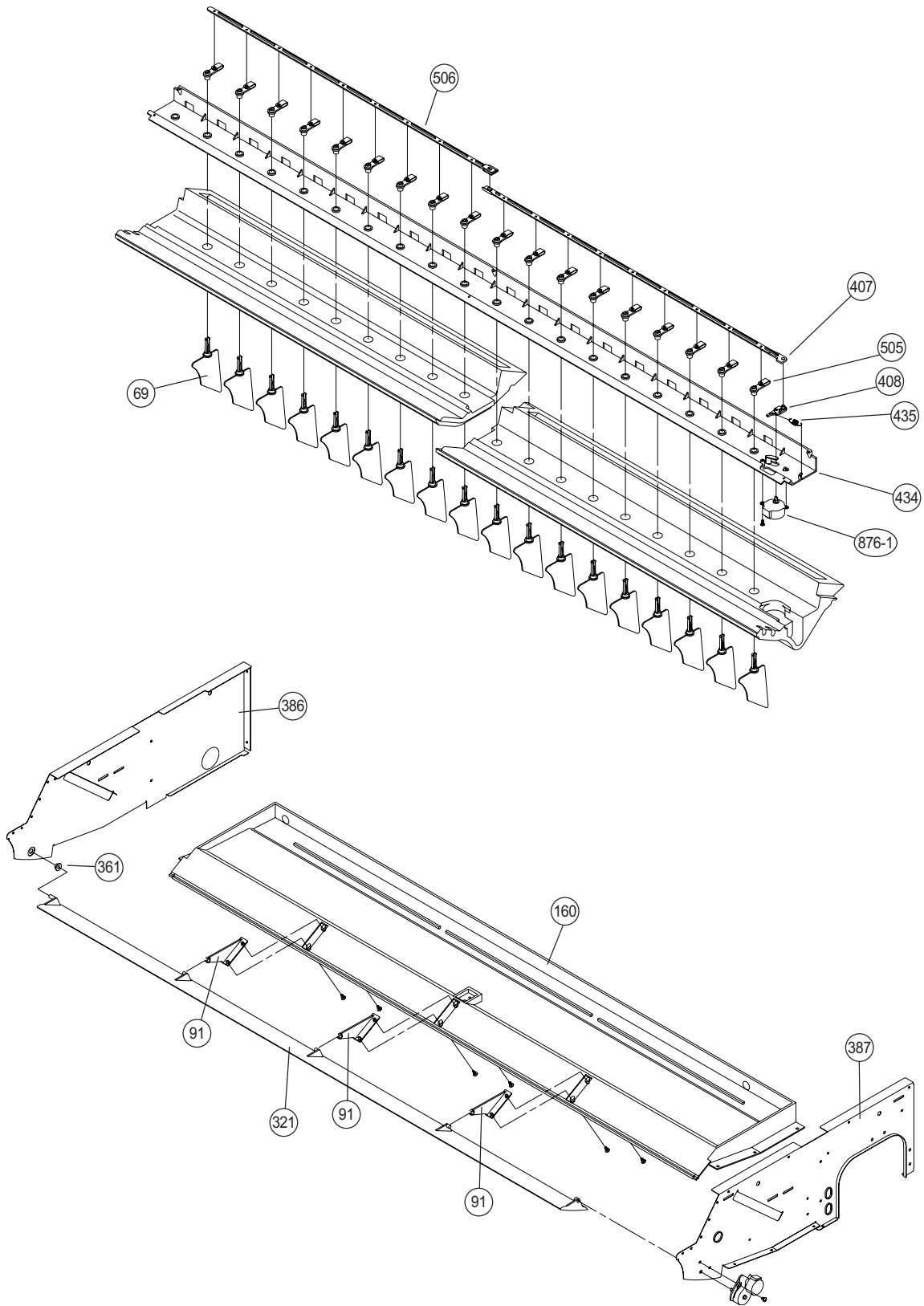
*When the start of the operation after pump down operation has been completed, temporarily disconnect the power supply after opening the closed valves (both liquid and gas). Reconnect the power supply after 2-3 minutes and be sure to perform a test operation for cooling.



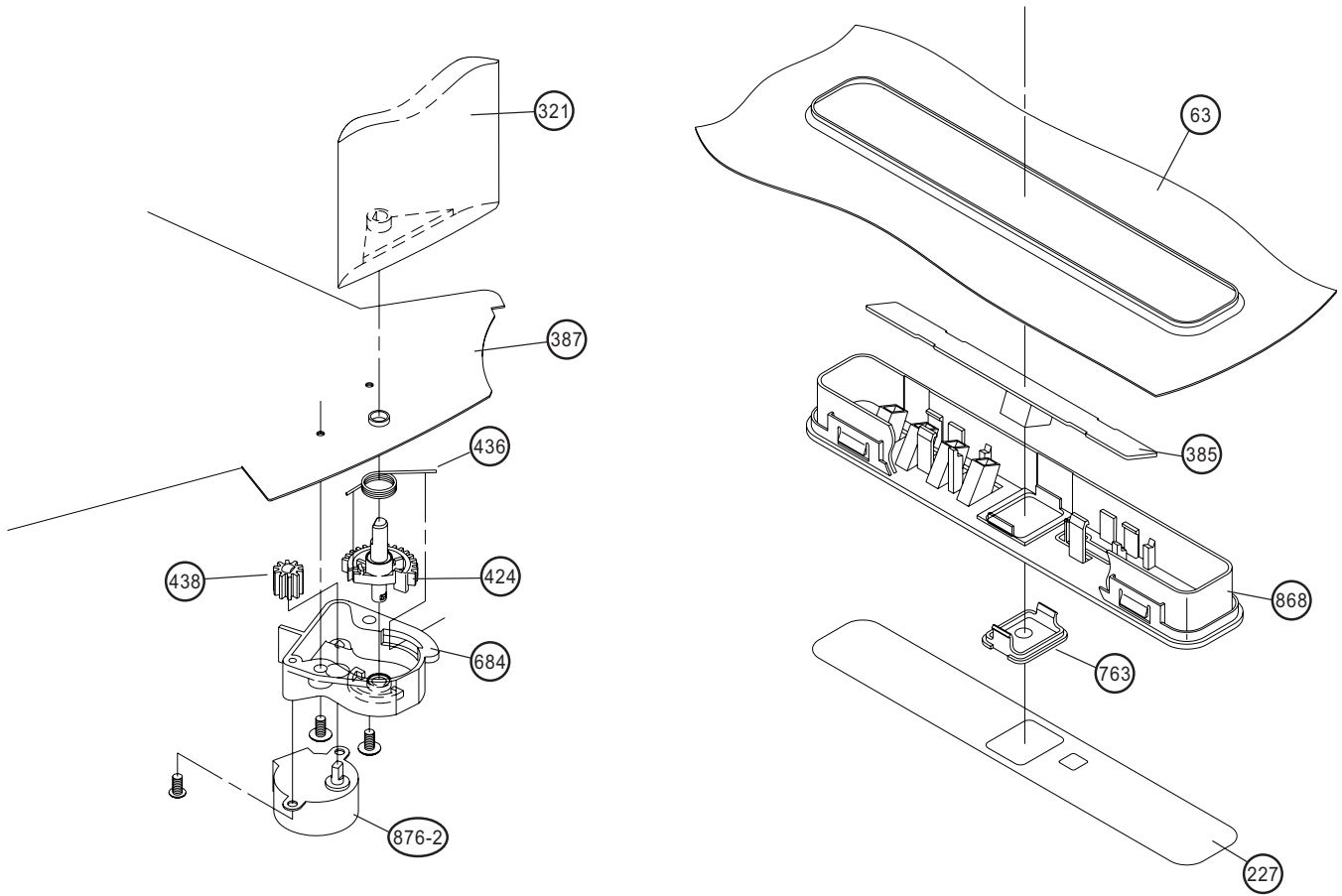
⚠ DANGER

This part (Choke coil) generates high voltages. Never touch this part.

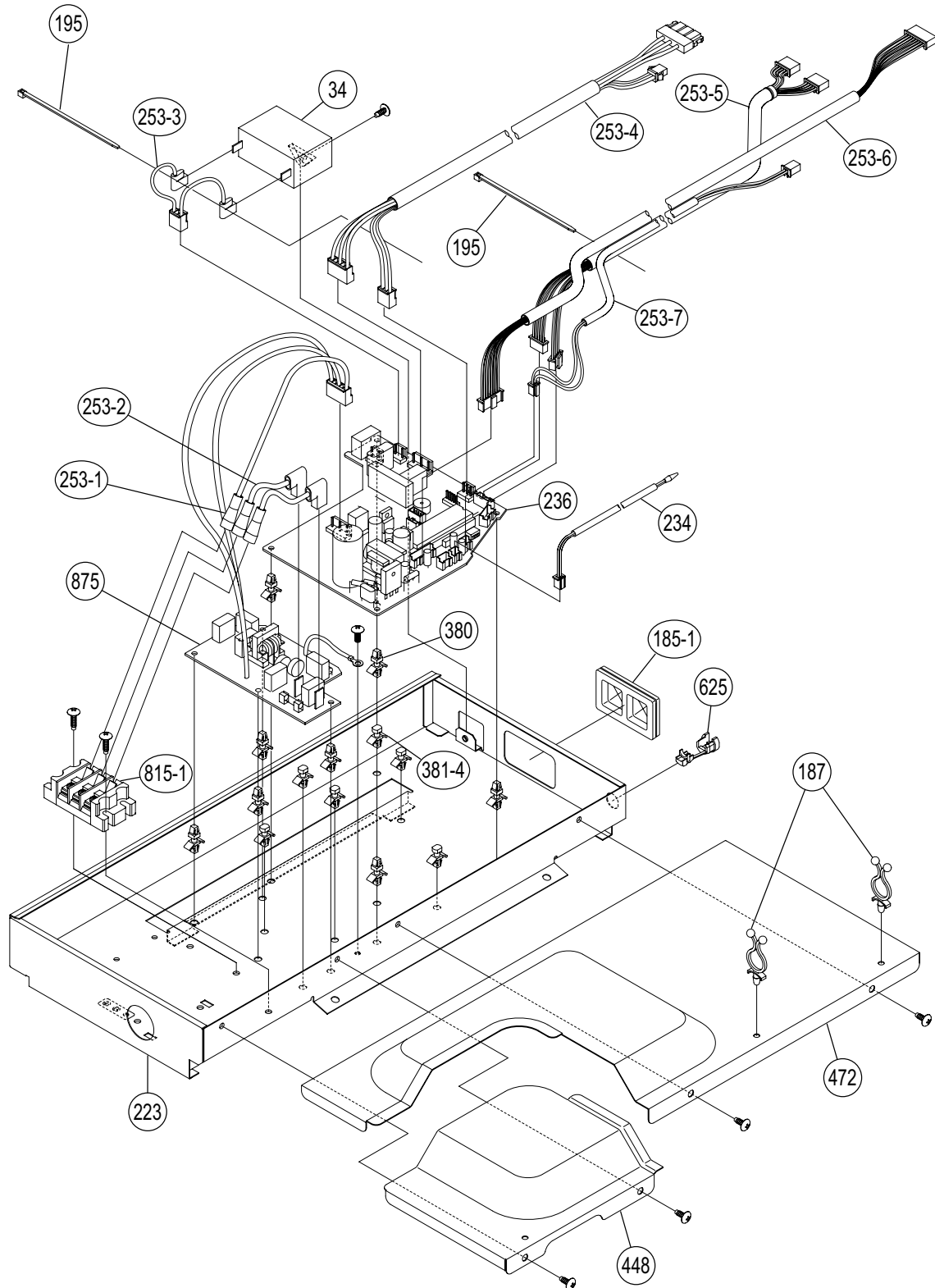
Model : MS36Y3F



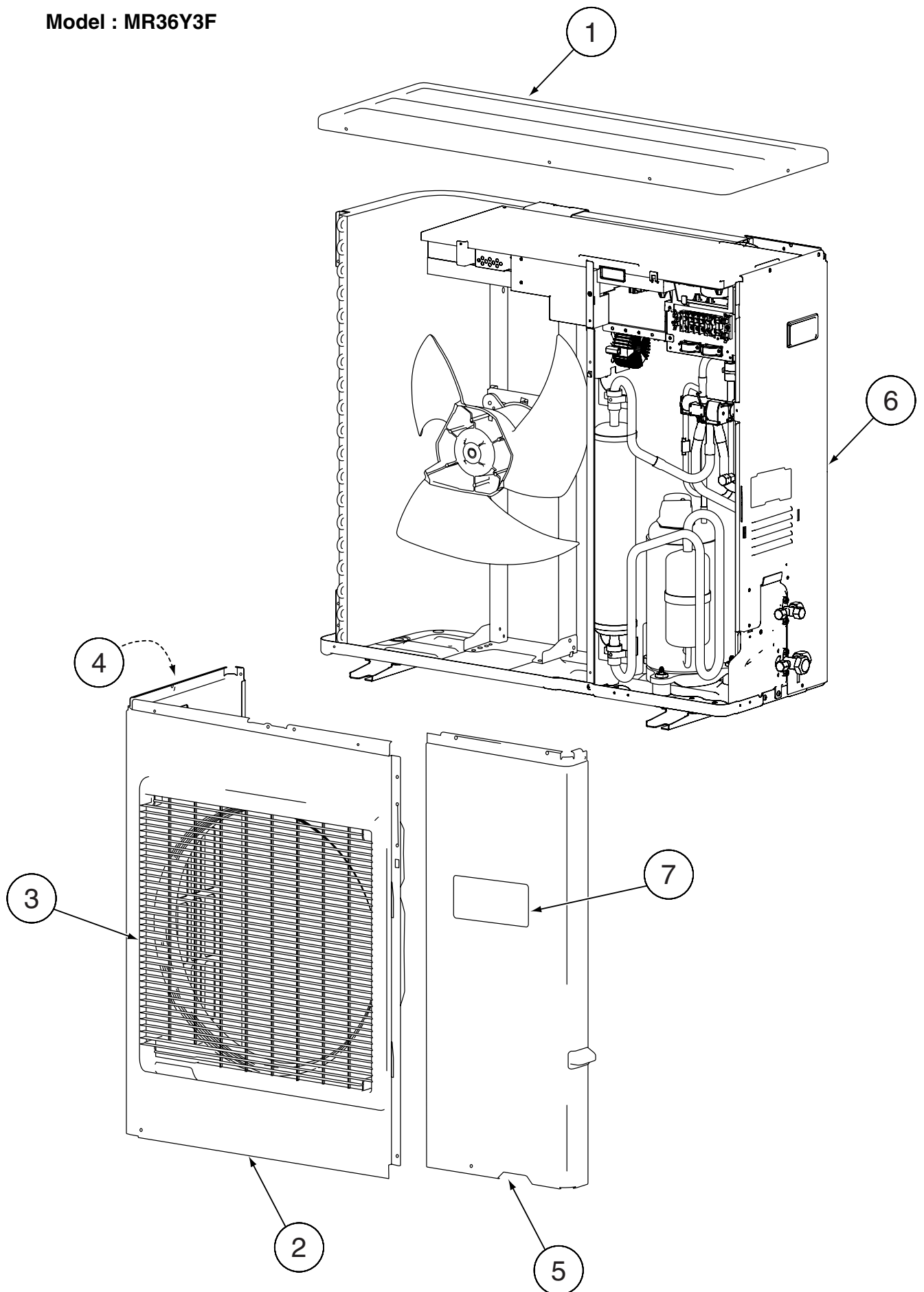
Model : MS36Y3F



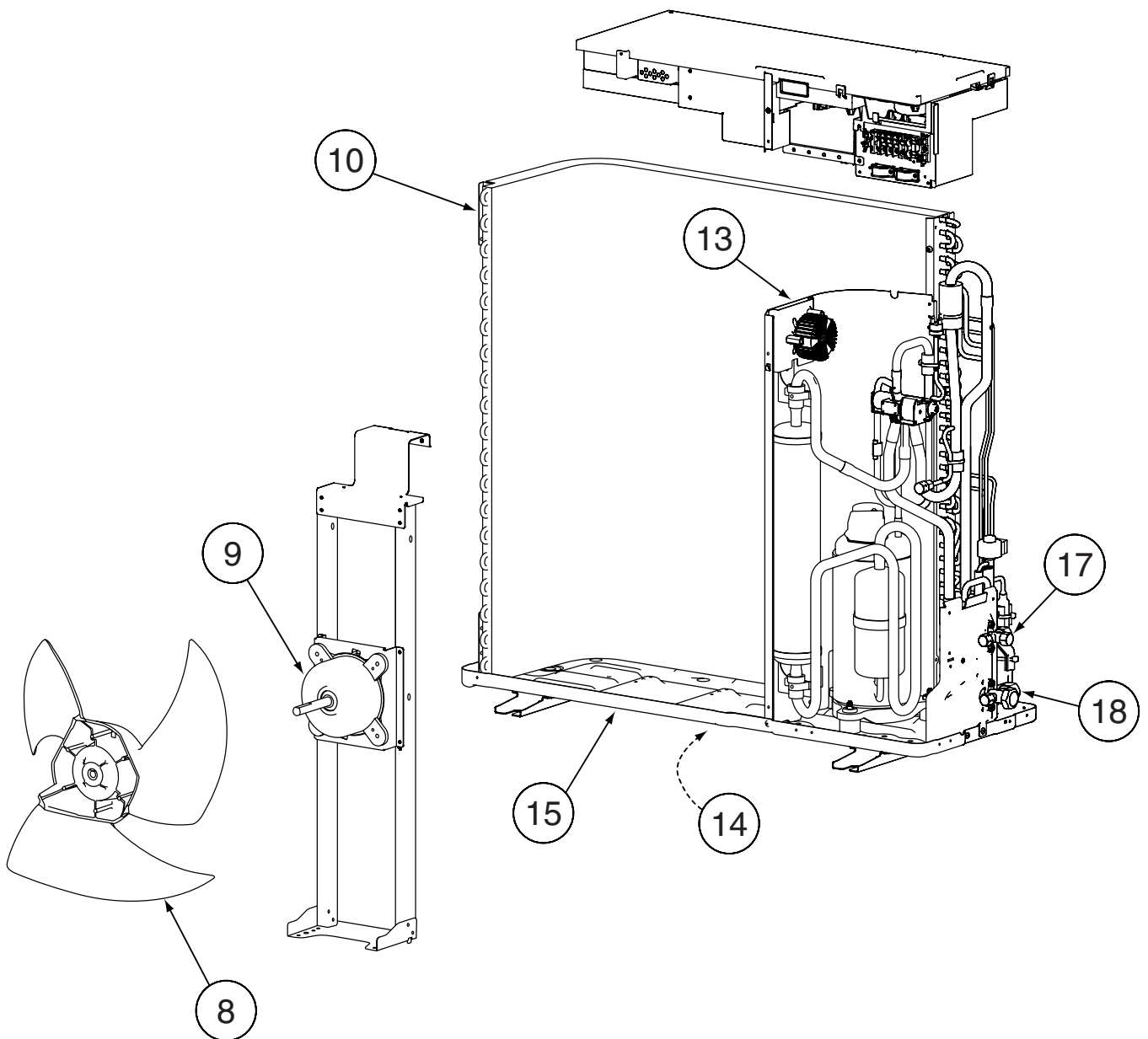
Model : MS36Y3F



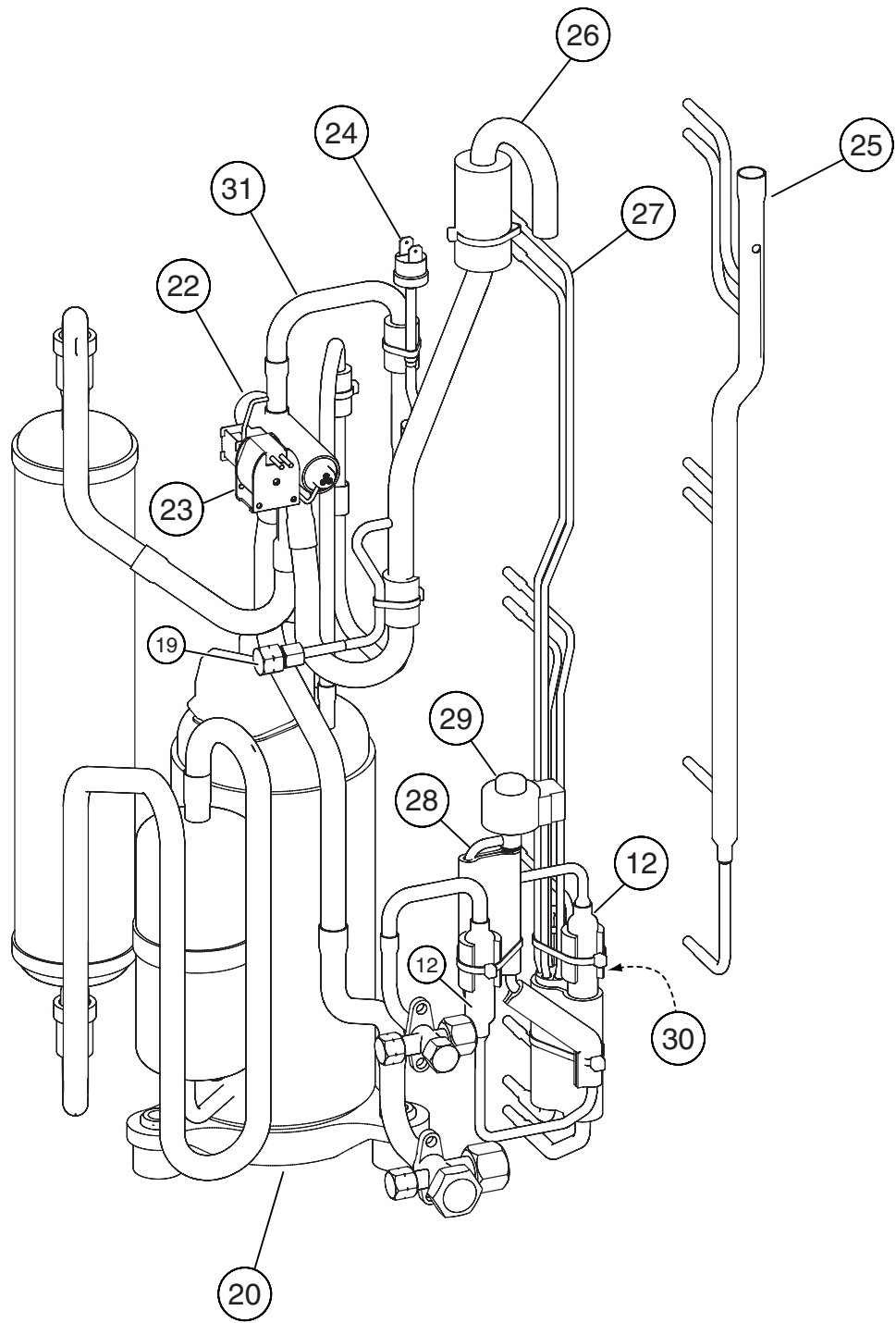
Model : MR36Y3F



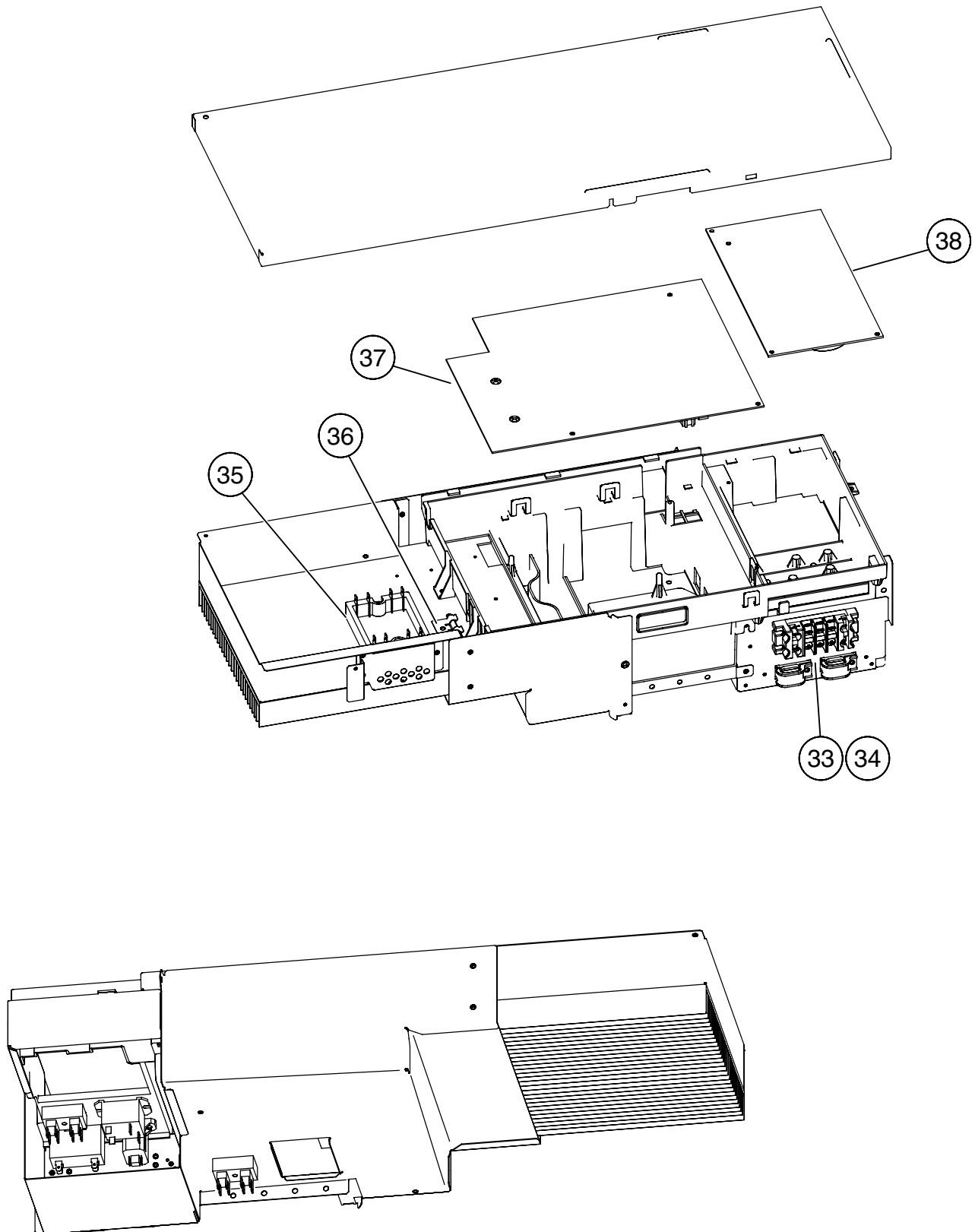
Model : MR36Y3F



Model : MR36Y3F



Model : MR36Y3F



PARTS LIST

INDOOR UNIT







| Ref. | Description | Part No. | Ref. | Description | Part No. |
|-------|-----------------------|----------------------------------|-------|----------------------------|--------------|
| 8 | Air Filter | 9359739005 | 345-1 | Filter Guide-R | 9359692003 |
| 12 | Base Assy | 9359680000 | 345-2 | Filter Guide-L | 9359693000 |
| 34 | Capacitor | 9900270216 | 361 | Bushing | 9359733003 |
| 56 | Sirocco Fan Assy | 9359701002 | 379 | Hinge Plate (Grille) | 9359694007 |
| 63 | Panel (Front) | 9359734000 | 380 | Locking Spacer KGLS-6S | 313209391403 |
| 69 | Louver | 9359719007 | 381-4 | Spacer | 0600118075 |
| 74 | Intake Grille | 9359738008 | 382 | Cover (Decoration)-R | 9359744009 |
| 91 | Hinge | 9359699002 | 383 | Cover (Decoration)-L | 9359745006 |
| 109 | Casing | 9359704003 | 384 | Shaft | 9359707004 |
| 122 | Bearing-B Assy | 9357921006 | 385 | Indicator PCB Assy | 9702260019 |
| 126 | Bracket (Motor) | 9359681007 | 386 | Panel Left Assy | 9359685005 |
| 138 | Separate Wall | 9359700005 | 387 | Kit (Panel Right Assy) | 9371361017 |
| 146 | Evaporator Assy | 9371073040 | 388 | Joint Assy | 9359706007 |
| 160 | Drain Pan Sub Assy | 9360429018 | 396 | Rfm Bracket Metal | 9359697008 |
| 164 | Fan Motor Assy-IN | 9360457004 | 403 | Fixture (Bearing) | 9359687009 |
| 174 | Hanger | 9359742005 | 407 | Rod (Motor) | 9359723004 |
| 181 | Hole Cover | 9359691006 | 408 | Link (Louver) | 9359726005 |
| 185-1 | Rubber Bushing | 9357376004 | 424 | Sector Gear | 9359729006 |
| 187 | Clamp No.1219 | 313361271706 | 434 | Base (Louver) | 9359718000 |
| 195 | Clamp SKB-100 | 313361275805 | 435 | Louver Spring | 9359720003 |
| 223 | Control Box Assy | 9362025003 | 436 | Flap Spring | 9359730002 |
| 227 | Badge "FRIEDRICH" | 9359735076 | 438 | Pinion Gear | 9359728009 |
| 228 | Insulation (Louver)-R | 9359721000 | 448 | Control Box-B | 9359713005 |
| 229 | Insulation (Louver)-L | 9359722007 | 472 | Control Box-A | 9359712008 |
| 234 | Thermistor (Room) | 9703299025 | 505 | Stopper (Louver) | 9359724001 |
| 236 | Controller PCB Assy | 9705914285 | 506 | Rod (Louver) | 9359725008 |
| 240 | Remote Control Unit | (K01AL-050RHSE-C1) 9371190051 | 580 | Cover (Top) | 9359737001 |
| 240-1 | Cover Panel (Pipe)-L | 9359690009 | 625 | Cord Bushing | 9359240006 |
| 240-2 | Cover Panel (Pipe)-R | 9359689003 | 684 | Motor Base | 9359727002 |
| 253-1 | Wire Assy (Terminal) | 9702321017 | 735 | Distributor Assy | 9360455000 |
| 253-2 | Wire Assy (Terminal) | 9702322014 | 743 | Remote Control Holder Case | 9305642014 |
| 253-3 | Wire Assembly | 9702311018 | 752 | Bracket Panel (Pipe) | 9359688006 |
| 253-4 | Wire Assy (Connector) | 9702323011 | 755 | Cover (Casing) | 9359705000 |
| 253-5 | Wire Assy (Connector) | 9702319014 | 761 | Kit (Cover Side-R) | 9371364018 |
| 253-6 | Wire Assy (Connector) | 9702317010 | 762 | Kit (Cover Side-L) | 9371365015 |
| 253-7 | Wire Assy (Connector) | 9702318017 | 763 | Cover (Receiver) | 9359714002 |
| 286 | Bracket (Bearing) | 9359686002 | 815-1 | Terminal-7P | 9703403019 |
| 321 | Flap Assy | 9359731009 | 868 | PCB Holder | 9359736004 |
| 329 | Coupling Pipe Assy | 9373038214 | 875 | Power Supply PCB Assy | 9704561350 |
| 338-1 | Fixture (Motor) | 9359702009 | 876-1 | Motor, Step-H | 9360479013 |
| 338-2 | Fixture (Motor)-B | 9359703006 | 876-2 | Motor, Step | 9900362010 |
| | | | --- | Thermistor (Pipe) | 9900022020 |


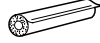



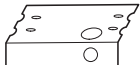

OUTDOOR UNIT

| Ref. | Description | Part No. |
|------|----------------------------|--------------|
| 1 | Top Panel Sub Assy | 9374417025 |
| 2 | Front Panel | 9374094066 |
| 3 | Fan Guard | 9374330010 |
| 4 | Grip Side | 9374173013 |
| 5 | Service Panel Sub Assy | 9374415038 |
| 6 | Right Panel Sub Assy | 9374416073 |
| 7 | LABEL (FRIEDRICH) | 9375212025 |
| 8 | Propeller Fan Assy | 9366378020 |
| 9 | Motor, Induction | 9602114016 |
| 10 | Condenser-A Assy | 9374433148 |
| 12 | Strainer Assy | 9372524015 |
| 13 | Separate Wall Assy | 9375226015 |
| 14 | Cap Foot | 9374345014 |
| 15 | Base Assy | 9374166183 |
| 17 | 3-Way Valve Assy | 9372205044 |
| 18 | 3-Way Valve Assy | 9372205075 |
| 19 | Check Joint Assy | 9372802038 |
| 20 | Compressor Assy | 9373711018 |
| 22 | 4-Way Valve | 9900164010 |
| 23 | Solenoid | 9900165055 |
| 24 | Pressure Switch | 9900186012 |
| 25 | Inlet Pipe Cond A Assy | 9373461067 |
| 26 | Inlet Pipe Cond B Assy | 9373463054 |
| 27 | Outlet Pipe Cond A Assy | 9374266050 |
| 28 | Expansion Valve Assy | 9370947113 |
| 29 | Coil (Expansion Valve) | 9900057039 |
| 30 | Distributor | 9369128004 |
| 31 | Discharge Pipe A Assy | 9372264140 |
| 33 | Terminal 2P | 9701971015 |
| 34 | Terminal 5P | 9900203023 |
| 35 | ACTPM | 9703457012 |
| 36 | Holder Thermo | 9372797013 |
| 37 | Inverter PCB Assy | 9705642102 |
| 38 | Power PCB Assy | 9705647053 |
| ---- | Fuse 3.15A-250V | 0600239534 |
| ---- | Thermistor (Outdoor Temp.) | 9900378035 |
| ---- | Heat Exchanger Thermistor | 9900374013 |
| ---- | Thermistor (Discharge) | 9704219114 |
| ---- | Compressor Thermistor | 9900156022 |
| ---- | Thermistor | 9704265012 |
| ---- | Heatsink Thermistor | 9900311018 |
| ---- | Transformer | 9702334024 |
| ---- | Varistor | 0000361224 |
| ---- | Arrester | 0600280147 |
| ---- | Relay | 9900117016 |
| ---- | Relay | 9900007010 |
| ---- | Switch Push | 9703476013 |
| ---- | Switch Slide | 9701392018 |
| ---- | Drain Pipe Assy | 9303029015 |
| ---- | Drain Cap | 313166024302 |

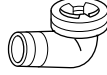

ACCESSORIES

INDOOR UNIT

| Name and Shape | Q'ty | Application |
|---|------|---|
| Remote control  | 1 | Use for air conditioner operation |
| Battery (penlight)  | 2 | For remote control unit |
| Remote control unit holder  | 1 | For mounting the remote control unit |
| Tapping screw (ø3 x 12)  | 2 | For remote control unit holder installation |
| Drain hose insulation  | 1 | Adhesive type 70 x 230 |
| VT wire  | 1 | For fixing the drain hose L 280 mm |

| Name and Shape | Q'ty | Application |
|--|--------------------------|--|
| Coupler heat insulator (large)  | 2 | For indoor side pipe joint (Gas pipe) |
| Coupler heat insulator (small)  | 1 | For indoor side pipe joint (Liquid pipe) |
| Nylon fastener  | Large 4 Small 4 | For fixing the coupler heat insulator |
| Special nut A (large flange)  | 4 | For installing indoor unit |
| Special nut B (small flange)  | 4 | For installing indoor unit |
| Installation template  | 1 | For positioning the indoor unit |
| Auxiliary pipe assembly  | 1 | For connecting the piping |

OUTDOOR UNIT

| Name and Shape | Q'ty | Application |
|---|------|---|
| Drain pipe  | 1 | For outdoor unit drain piping work (May not be supplied, depending on the model.) |
| Drain cap  | 5 | |

OPTIONAL PARTS

The following options are available.

DRAIN PUMP UNIT : UTR-DPB241 (P/N 9034087001)

WIRED REMOTE CONTROLLER UNIT : UTB-UUB(P/N 9075887004)

0602G3034