

**S/M No. :**

# **Service Manual**

**AIR CONTIONER**

**Model: DSB-F0916LH-DV**

**✓ Caution**

: In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center (<http://svc.dwe.co.kr>).

**DAEWOO**   
ELECTRONICS

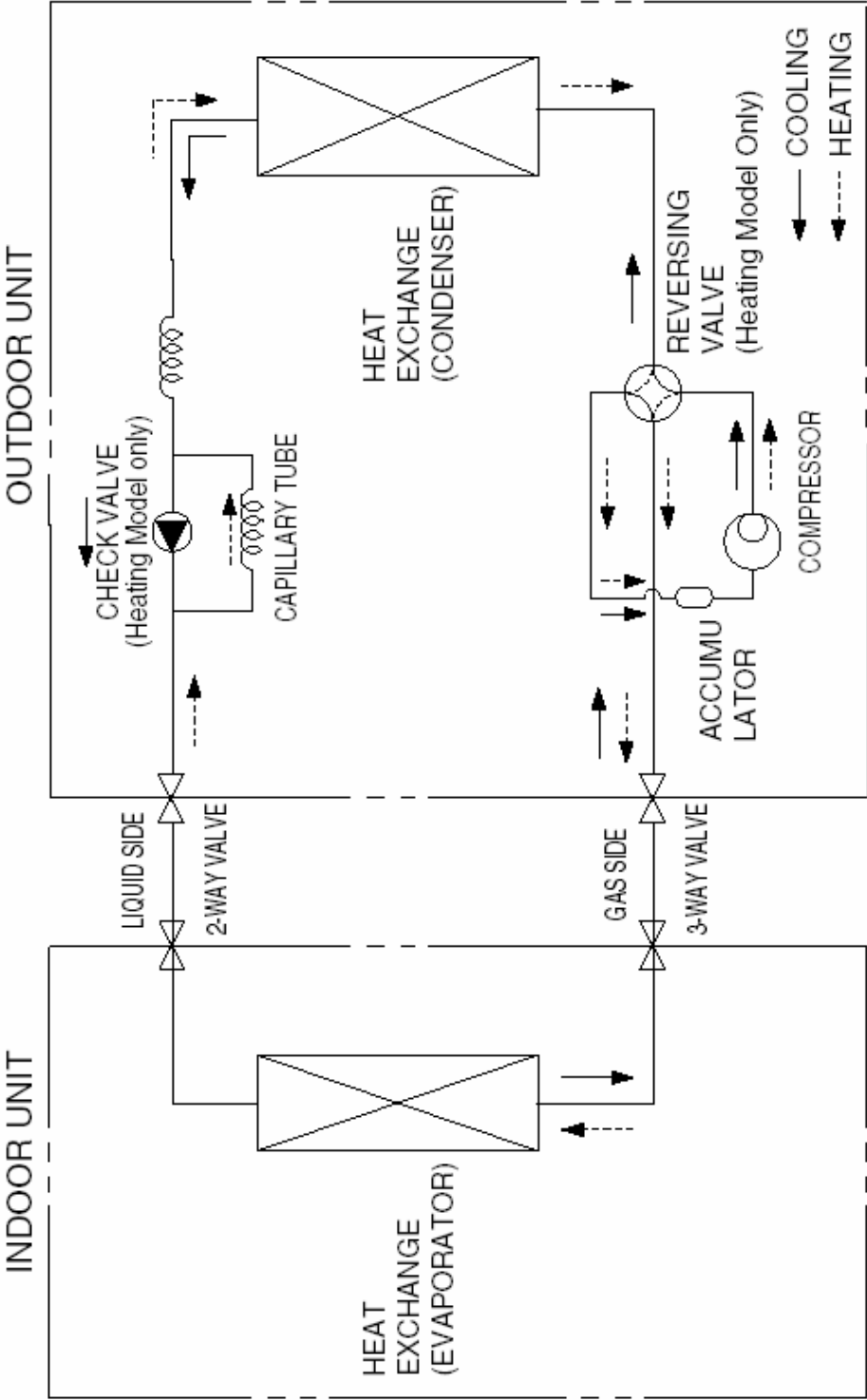
Oct. 2009

## 4. Specification

|                               |                              |          |                  |
|-------------------------------|------------------------------|----------|------------------|
| Indoor                        |                              |          | DSB-F0916LH-DV   |
| Outdoor                       |                              |          | MOA-09HDN1-QC2   |
| Power supply                  |                              | Ph-V-Hz  | 1,220-240V~,50Hz |
| Cooling                       | Capacity                     | Btu/h    | 8500(2250~10000) |
|                               | Input                        | W        | 770(180~1100)    |
|                               | Rated current                | A        | 3.4(0.9~4.8)     |
|                               | EER                          | W/W      | 3.23             |
| Heating                       | Capacity                     | Btu/h    | 9000(2300~11000) |
|                               | Input                        | W        | 730(170~1050)    |
|                               | Rated current                | A        | 3.2(0.8~4.6)     |
|                               | COP                          | W/W      | 3.61             |
| Moisture Removal              |                              | L/h      | 0.9              |
| Max. input consumption        |                              | W        | 1610             |
| Max. current                  |                              | A        | 7.0              |
| Starting current              |                              | A        | 5.1              |
| Compressor                    | Model                        |          | DA89X1C-23EZD1   |
|                               | Type                         |          | Rotary           |
|                               | Brand                        |          | Toshiba          |
|                               | Capacity                     | Btu/h    | 8803             |
|                               | Input                        | W        | 685              |
|                               | Rated current(RLA)           | A        | 4.65             |
|                               | Locked rotor Amp(LRA)        | A        | 10               |
|                               | Thermal protector            |          | CS-74            |
|                               | Capacitor                    | uF       | No               |
|                               | Refrigerant oil              | ml       | 370              |
| Indoor fan motor              | Model                        |          | RPG20E           |
|                               | Brand                        |          | Welling          |
|                               | Input                        | W        | 45               |
|                               | Capacitor                    | uF       | 1.5              |
|                               | Speed(hi/mi/lo)              | r/min    | 1200/1000/850    |
| Indoor air flow (Hi/Mi/Lo)    |                              | m3/h     | 500/420/350      |
| Indoor noise level (Hi/Mi/Lo) |                              | dB(A)    | 40/34/29         |
| Indoor unit                   | Dimension (W*H*D)            | mm       | 790×275×190      |
|                               | Packing (W*H*D)              | mm       | 865×350×265      |
|                               | Net/Gross weight             | Kg       | 7.5/9.5          |
| Outdoor fan motor             | Model                        |          | YDK24-6K         |
|                               | Brand                        |          | Welling          |
|                               | Input                        | W        | 63/49            |
|                               | Capacitor                    | uF       | 2.5              |
|                               | Speed                        | r/min    | 815/590          |
| Outdoor air flow              |                              | m3/h     | 1800             |
| Outdoor noise level           |                              | dB(A)    | 53               |
| Outdoor unit                  | Dimension(W*H*D)             | mm       | 700×535×235      |
|                               | Packing (W*H*D)              | mm       | 815×580×325      |
|                               | Net/Gross weight             | Kg       | 28/30            |
| Refrigerant type R410A        |                              | g        | 700              |
| Refrigerant piping            | Liquid side/ Gas side        | mm(inch) | Φ6.35/Φ9.53      |
|                               | Max. refrigerant pipe length | m        | 20               |
|                               | Max. difference in level     | m        | 8                |
| Operation temp                |                              | ℃        | 17 ~ 30          |
| Ambient temp                  |                              | ℃        | -15 ~ 50         |

The above design and specifications are subject to change without prior notice for product improvement.

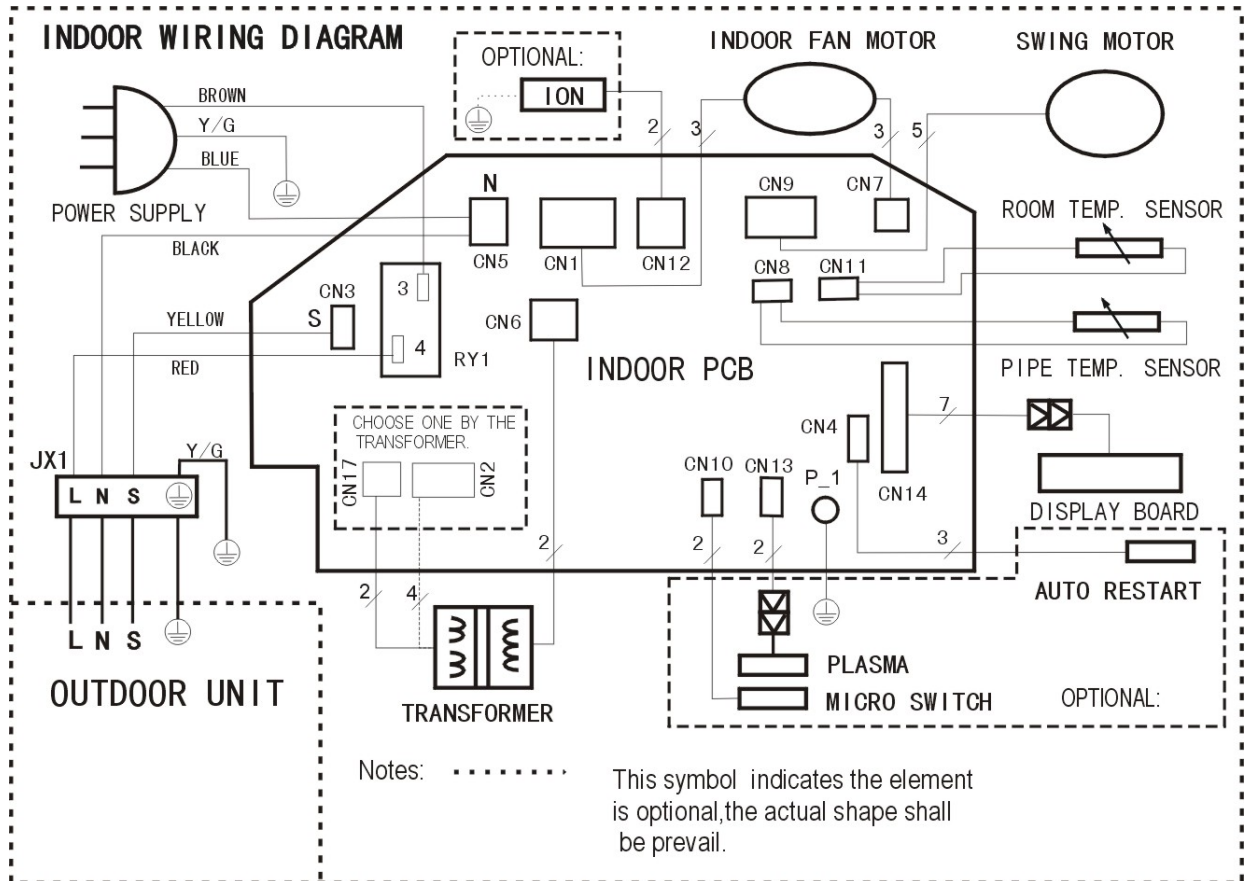
5. Refrigerant cycle diagram



## 6. Wiring diagram

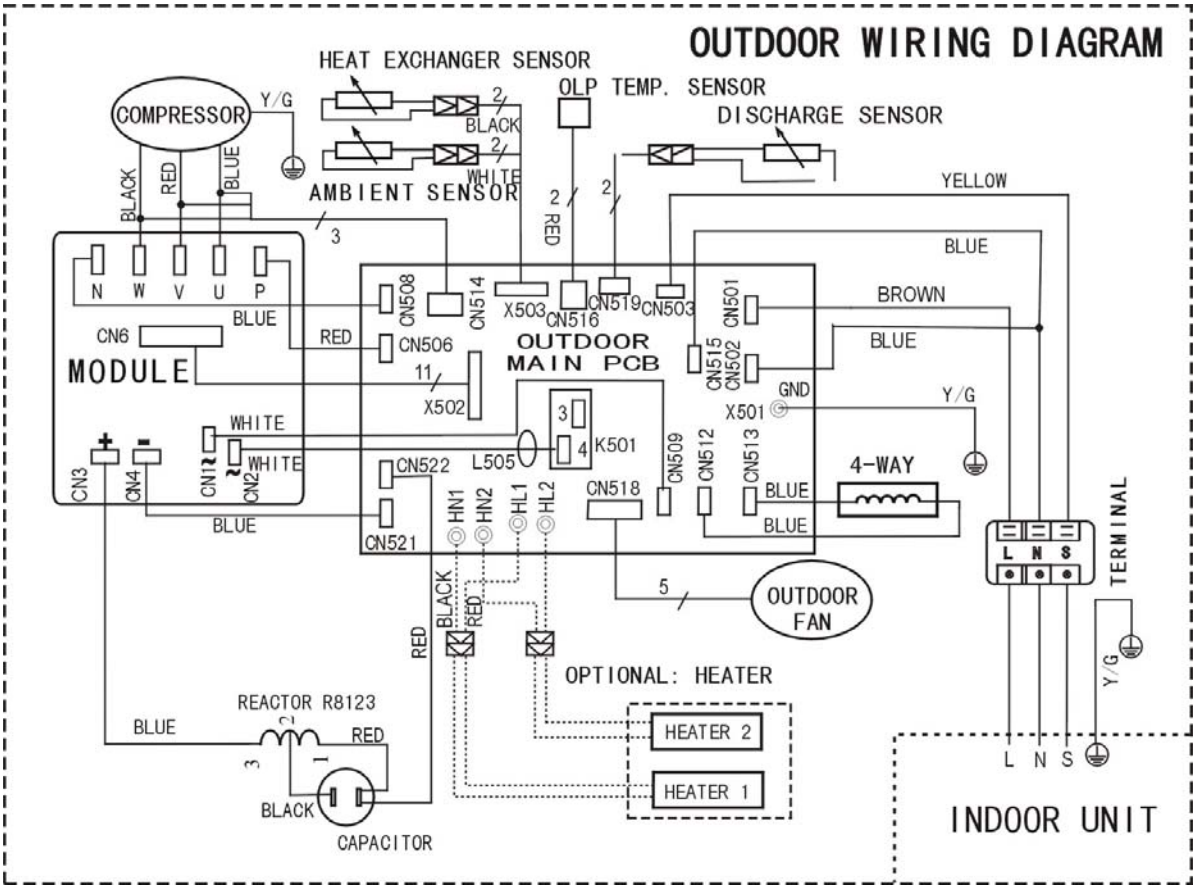
### 6.1 Indoor Unit

DSB-F0916LH-DV



6.2 Outdoor Unit

DSB-F0916LH-DV



## 7. Installation details

### 7.1 Wrench torque sheet for installation

| Outside diameter |      | Torque |
|------------------|------|--------|
| mm               | inch | Kgf·m  |
| Φ6.35            | 1/4  | 1.8    |
| Φ9.52            | 3/8  | 4.2    |
| Φ12.7            | 1/2  | 5.5    |

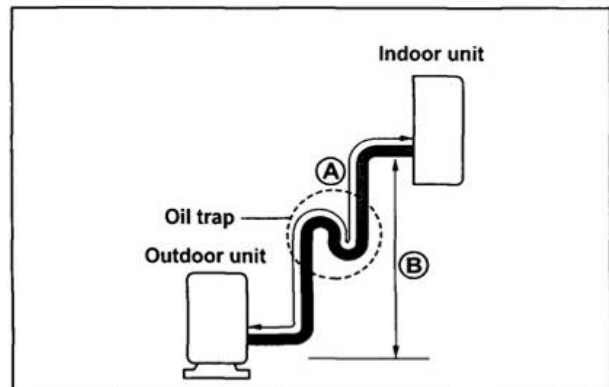
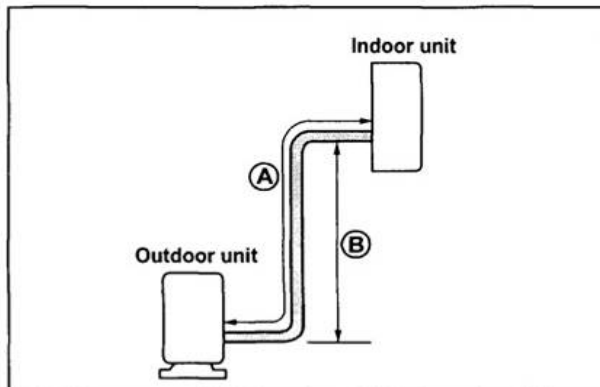
### 7.2 Connecting the cables

The power cord of connect should be selected according to the following specifications sheet.

|                 | Grade |     |
|-----------------|-------|-----|
| Unit            | 9K    | 12K |
| mm <sup>2</sup> | 1.0   | 1.5 |

### 7.3 Pipe length and the elevation

| Capacity<br>Btu/h | Pipe size    |              | Standard<br>length<br>(m) | Max.<br>Elevation<br>B (m) | Max.<br>Elevation<br>A (m) | Additional<br>refrigerant<br>(g/m) |
|-------------------|--------------|--------------|---------------------------|----------------------------|----------------------------|------------------------------------|
|                   | Gas          | Liquid       |                           |                            |                            |                                    |
| 9k~12K            | 3/8" (Φ9.52) | 1/4" (Φ6.35) | 5                         | 8                          | 20                         | 30                                 |
|                   | 1/2" (Φ12.7) | 1/4" (Φ6.35) | 5                         | 8                          | 20                         | 30                                 |



#### Caution:

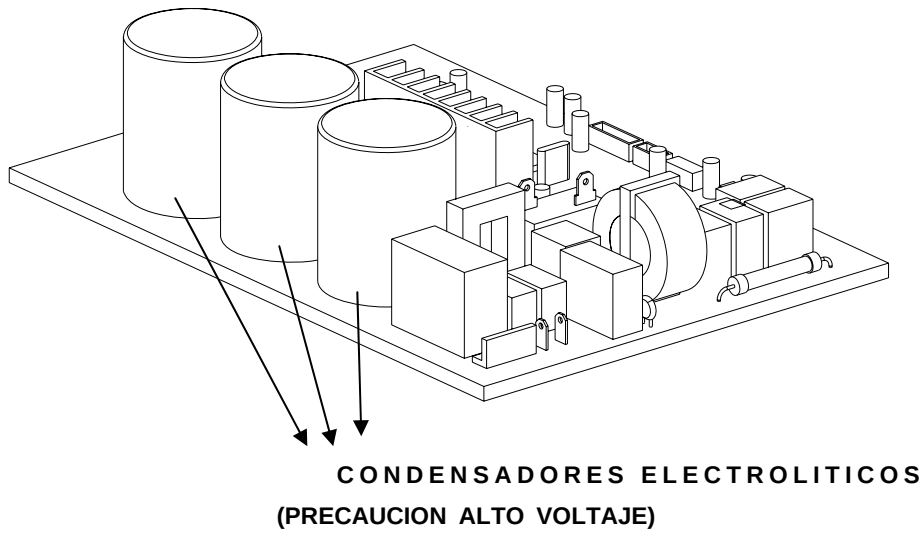
Capacity is base on standard length and maximum allowance length is base of reliability.

Oil trap should be installed per 5-7 meters.

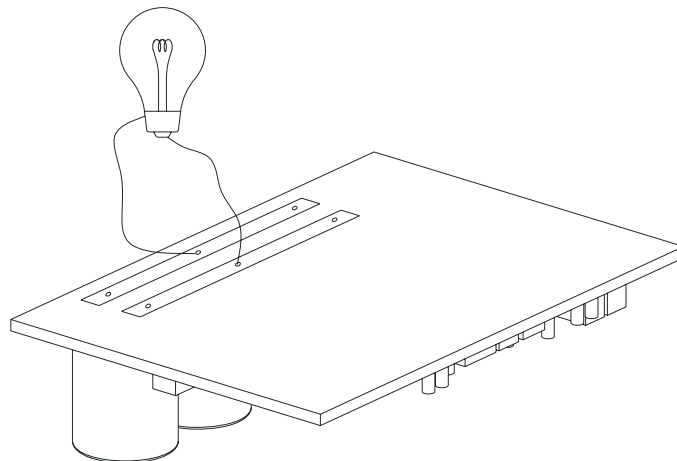
## 10. Troubleshooting

### Safety

Because of there are capacitors in PCB and relative circuit in outdoor unit, even shut down the power supply, electricity power still are kept in capacitors, do not forget to discharge the electricity power in capacitor.



**Bulb (25-40W) PARA DESCARGAR LOS CONDENSADORES**



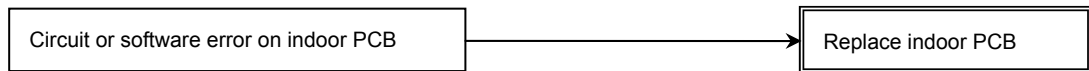
## 10.1 Indoor Unit Error Display

| Display | LED STATUS                                                               |
|---------|--------------------------------------------------------------------------|
| E0      | EEPROM parameter error                                                   |
| E1      | Indoor / outdoor units communication protection                          |
| E2      | Zero-crossing signal error                                               |
| E3      | Fan speed out of control                                                 |
| E5      | Open or short circuit of outdoor ambient or condenser temperature sensor |
| E6      | Open or short circuit of indoor room or evaporator temperature sensor    |
| P0      | Inverter module (IGBT) over-strong current protection                    |
| P1      | Over voltage or too low voltage protection                               |
| P2      | Temperature protection of compressor top.                                |
| P4      | Inverter compressor drive error                                          |

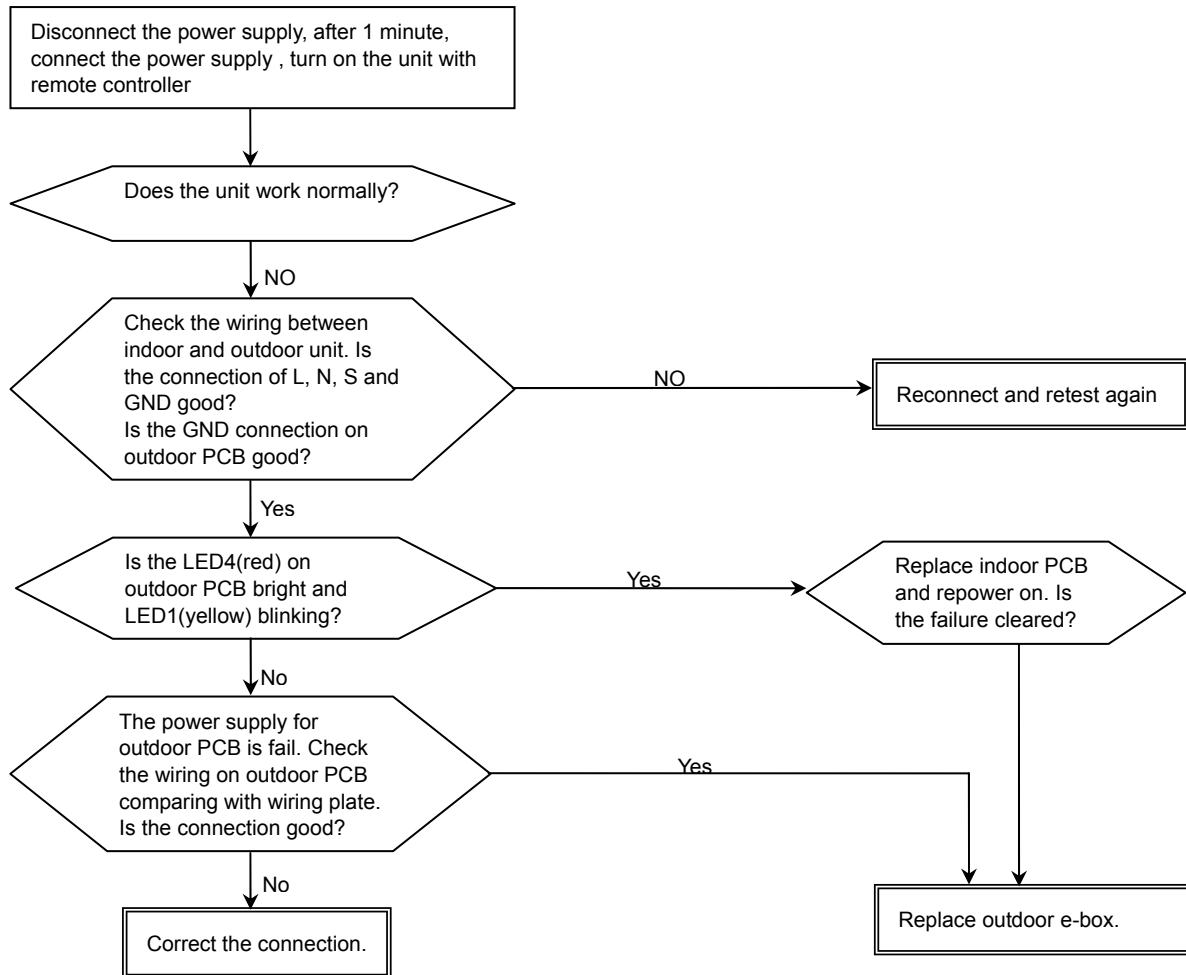
**Note: E4 & P3: Reserved function**

## 10.2 Diagnosis and Solution

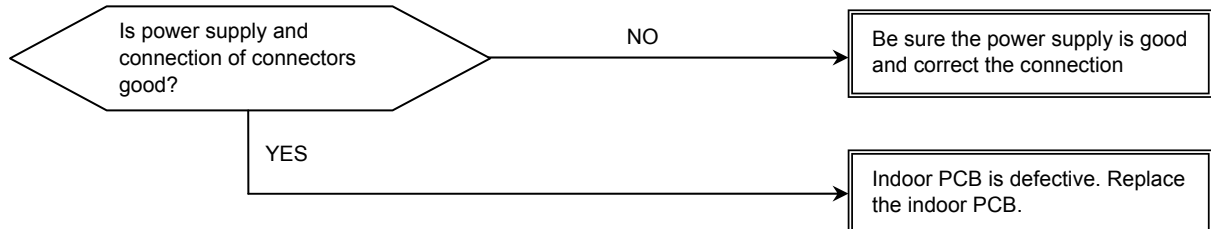
### 10.2.1 E0(EEPROM parameter error) error diagnosis and solution



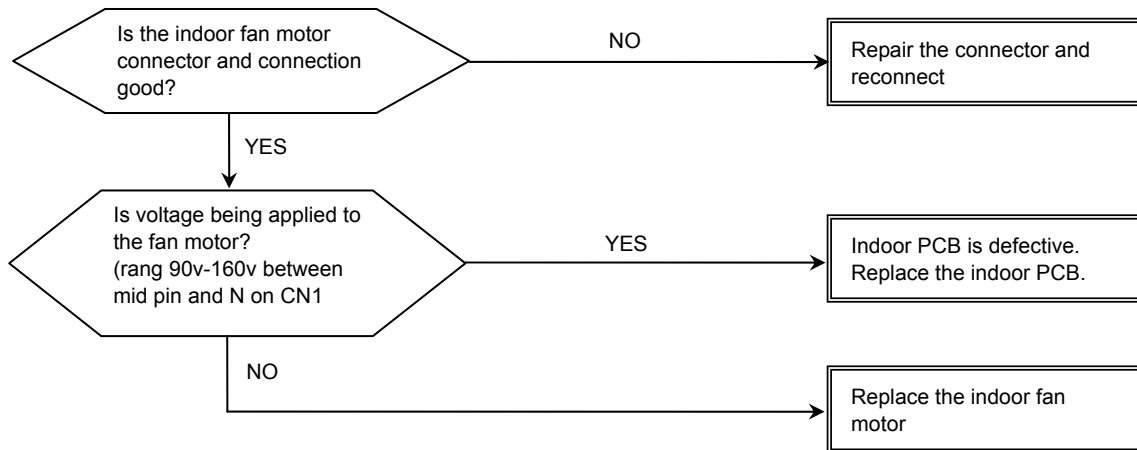
### 10.2.2 E1(indoor / outdoor units communication protection) error diagnosis and solution



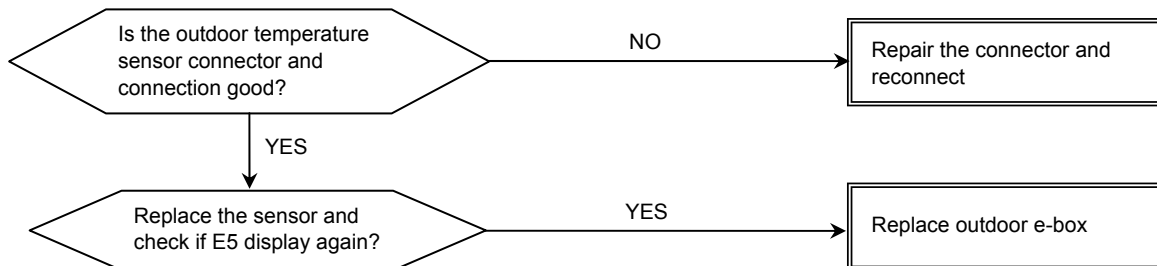
### 10.2.3 E2(zero-crossing signal error) diagnosis and solution



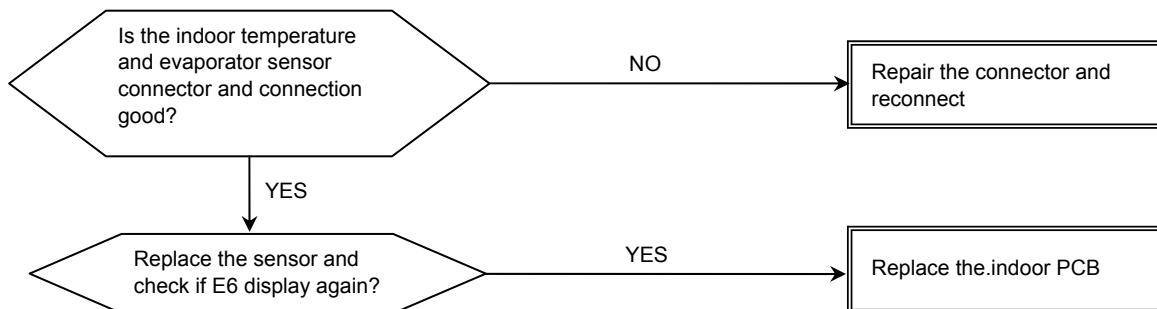
#### 10.2.4 E3(indoor fan speed out of control) diagnosis and solution



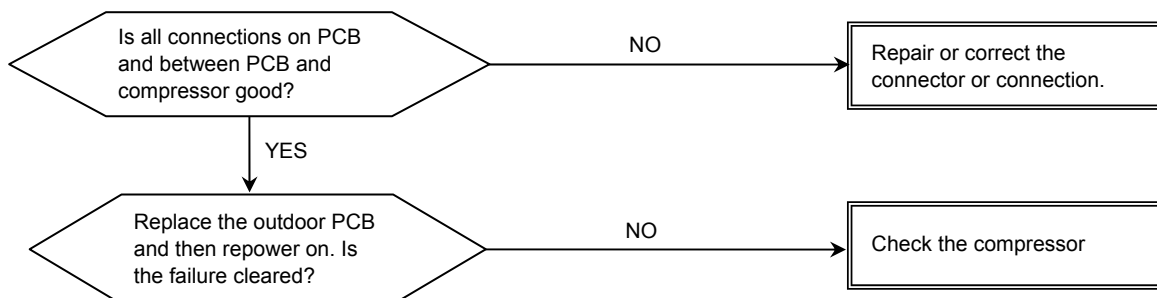
#### 10.2.5 E5(Open or short circuit of outdoor ambient or condenser temperature sensor) diagnosis and solution.



#### 10.2.6 E6(open or short circuit of indoor room or evaporator temperature sensor) diagnosis and solution.



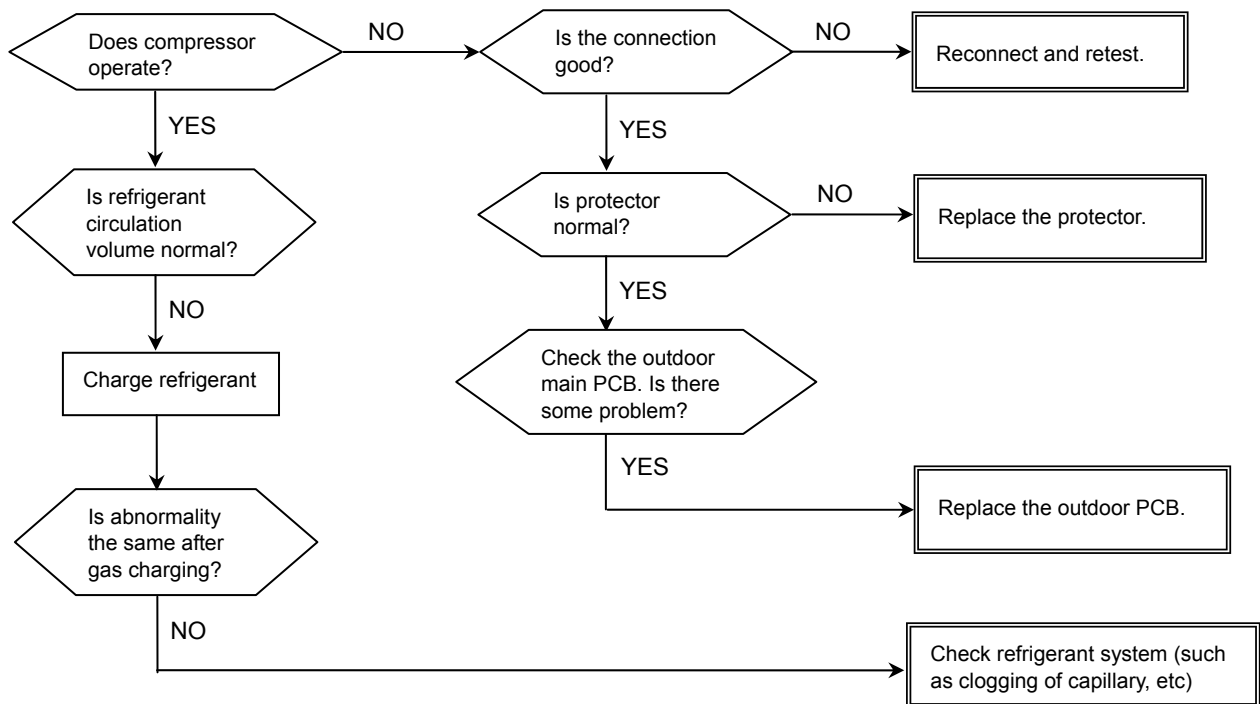
#### 10.2.7 P0(IGBT over-strong current protection) diagnosis and solution.



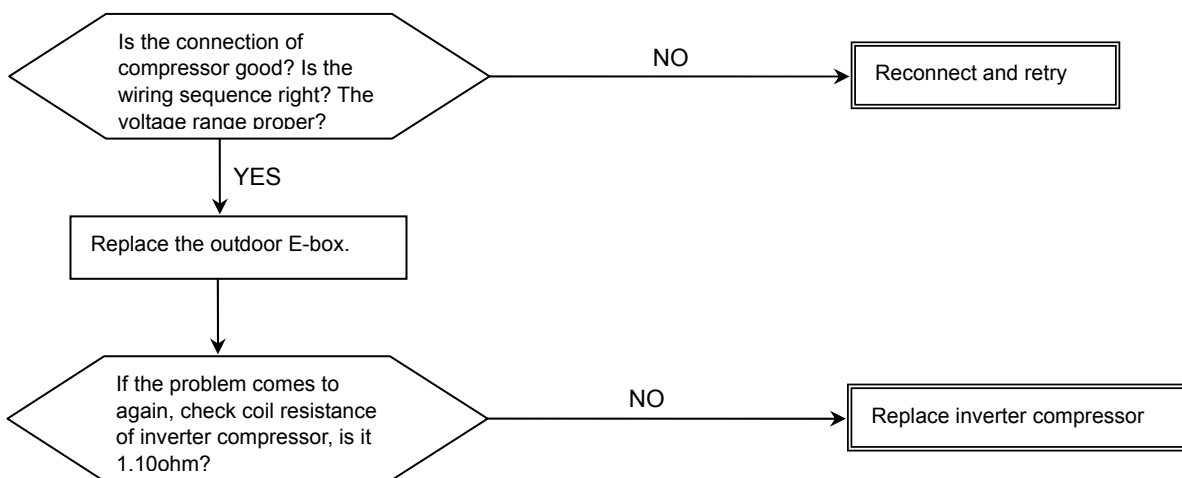
#### 10.2.8 P1(over voltage or too low voltage protection) diagnosis and solution.



#### 10.2.9 P2(temperature protection of compressor top) diagnosis and solution.



#### 10.2.10 P4(inverter compressor drive error) diagnosis and solution.

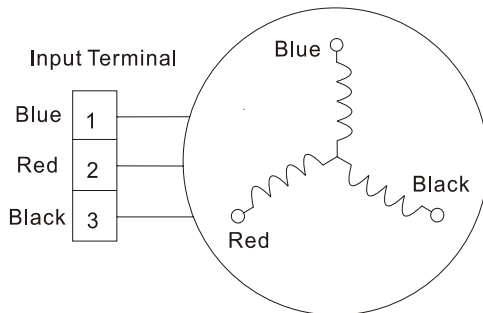


## 10.3 Key parts checking.

### 10.3.1. Compressor checking

(Model: DA89X1C-23EZD1 for MSR1-09HRDN1-QC2(C), DA89X1C-23FZ for MSR1-09HRDN1-QC2(C)).

Measure the resistance value of each winding by using the multi-meter.

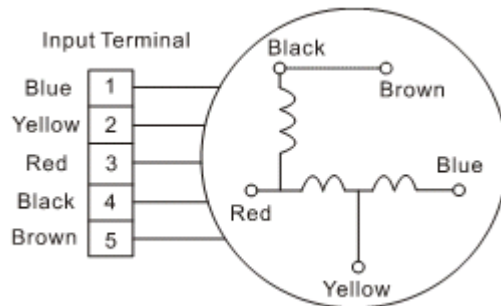


| Position     | Resistance Value |
|--------------|------------------|
| Blue - Red   | 1.10Ω<br>(20°C)  |
| Blue - Black |                  |
| Red - Blue   |                  |

### 10.3.2 Outdoor Fan Motor

(Model: YDK24-6K for MSR1-09HRDN1-QC2(C), YDK24-6G for MSR1-12HRDN1-QC2(C)).

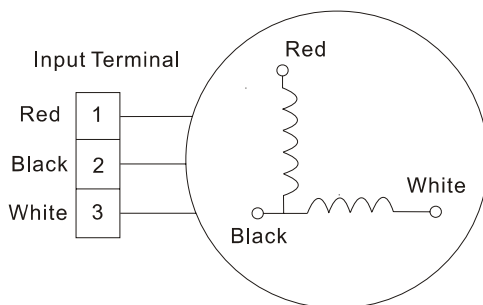
Measure the resistance value of each winding by using the multi-meter.



| Position      | Resistance Value                                            |
|---------------|-------------------------------------------------------------|
| Black - Red   | 350Ω ±8% (20°C) for YDK24-6K<br>435Ω±8% (20°C) for YDK24-6G |
| Blue - Red    | 222Ω ±8% (20°C) for YDK24-6K<br>213Ω±8% (20°C) for YDK24-6G |
| Yellow - Blue | 222Ω ±8% (20°C) for YDK24-6K<br>213Ω±8% (20°C) for YDK24-6G |

### 10.3.3 Indoor Fan Motor (Model:RPG20E).

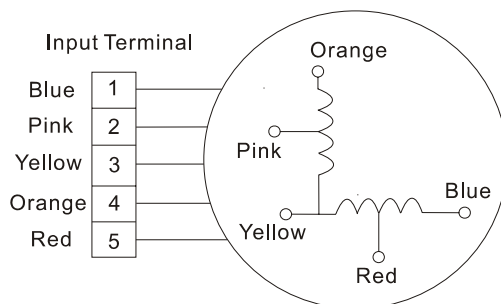
Measure the resistance value of each winding by using the multi-meter.



| Position      | Resistance Value |
|---------------|------------------|
| Black - Red   | 387Ω±8% (20°C)   |
| White - Black | 378Ω±8% (20°C)   |

### 10.3.4 Step Motor (Model: MP24GA).

Measure the resistance value of each winding by using the multi-meter.



| Position      | Resistance Value |
|---------------|------------------|
| Blue - Red    | 200Ω±7% (25°C)   |
| Pink - Orange |                  |
| Pink - Yellow |                  |
| Yellow - Red  |                  |

### 10.3.5 Temperature Sensors.

Room temp.(T1) sensor,

Indoor coil temp.(T2) sensor,

Outdoor coil temp.(T3) sensor,

Outdoor ambient temp.(T4) sensor,

Compressor exhaust temp.(Te) sensor.

Measure the resistance value of each winding by using the multi-meter.

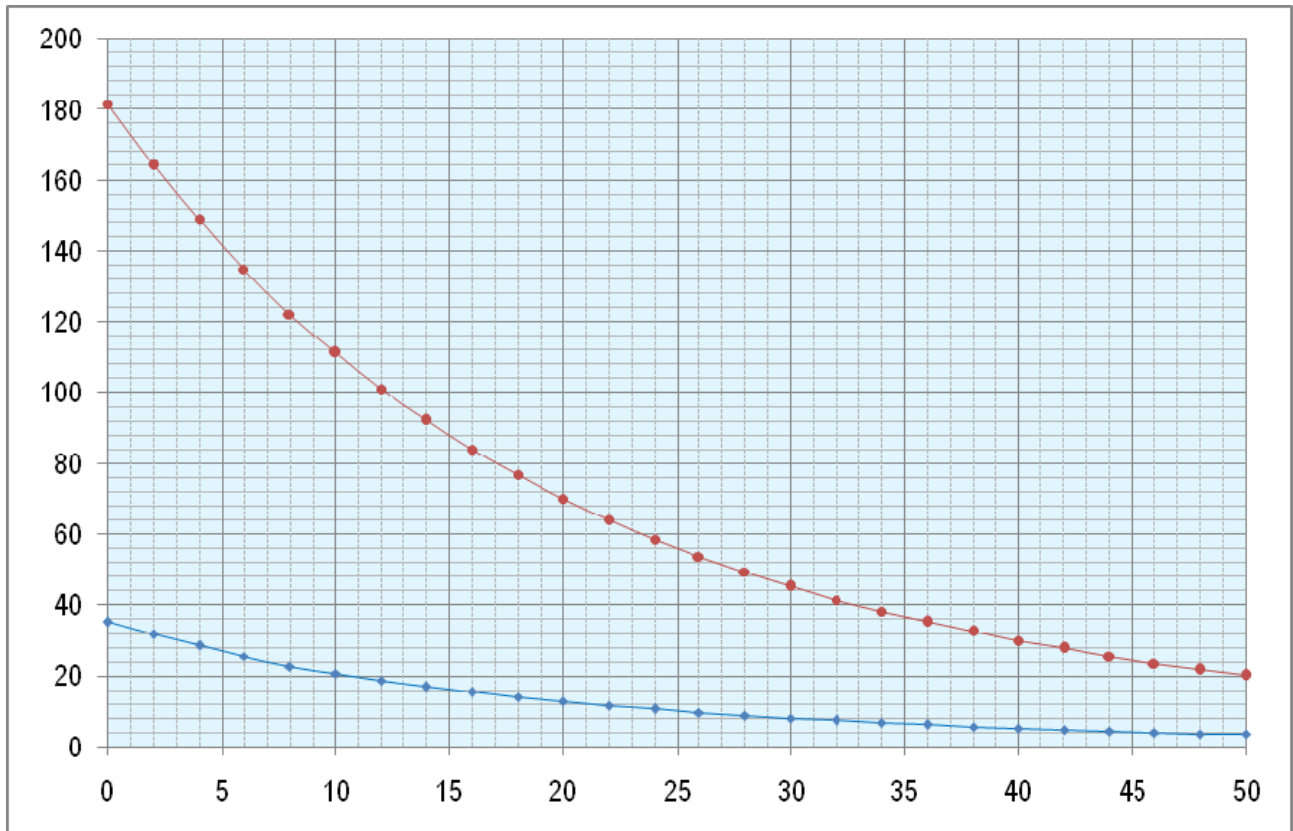
Some frequently-used R-T data for T1,T2,T3 and T4 sensor:

| Temperature (°C)      | 5    | 10   | 15   | 20   | 25 | 30 | 40  | 50  | 60  |
|-----------------------|------|------|------|------|----|----|-----|-----|-----|
| Resistance Value (KΩ) | 26.9 | 20.7 | 16.1 | 12.6 | 10 | 8  | 5.2 | 3.5 | 2.4 |

Some frequently-used R-T data for Te sensor:

| Temperature (°C)      | 5     | 15 | 25   | 35   | 60   | 70  | 80  | 90 | 100 |
|-----------------------|-------|----|------|------|------|-----|-----|----|-----|
| Resistance Value (KΩ) | 141.6 | 88 | 56.1 | 36.6 | 13.8 | 9.7 | 6.9 | 5  | 3.7 |

KΩ

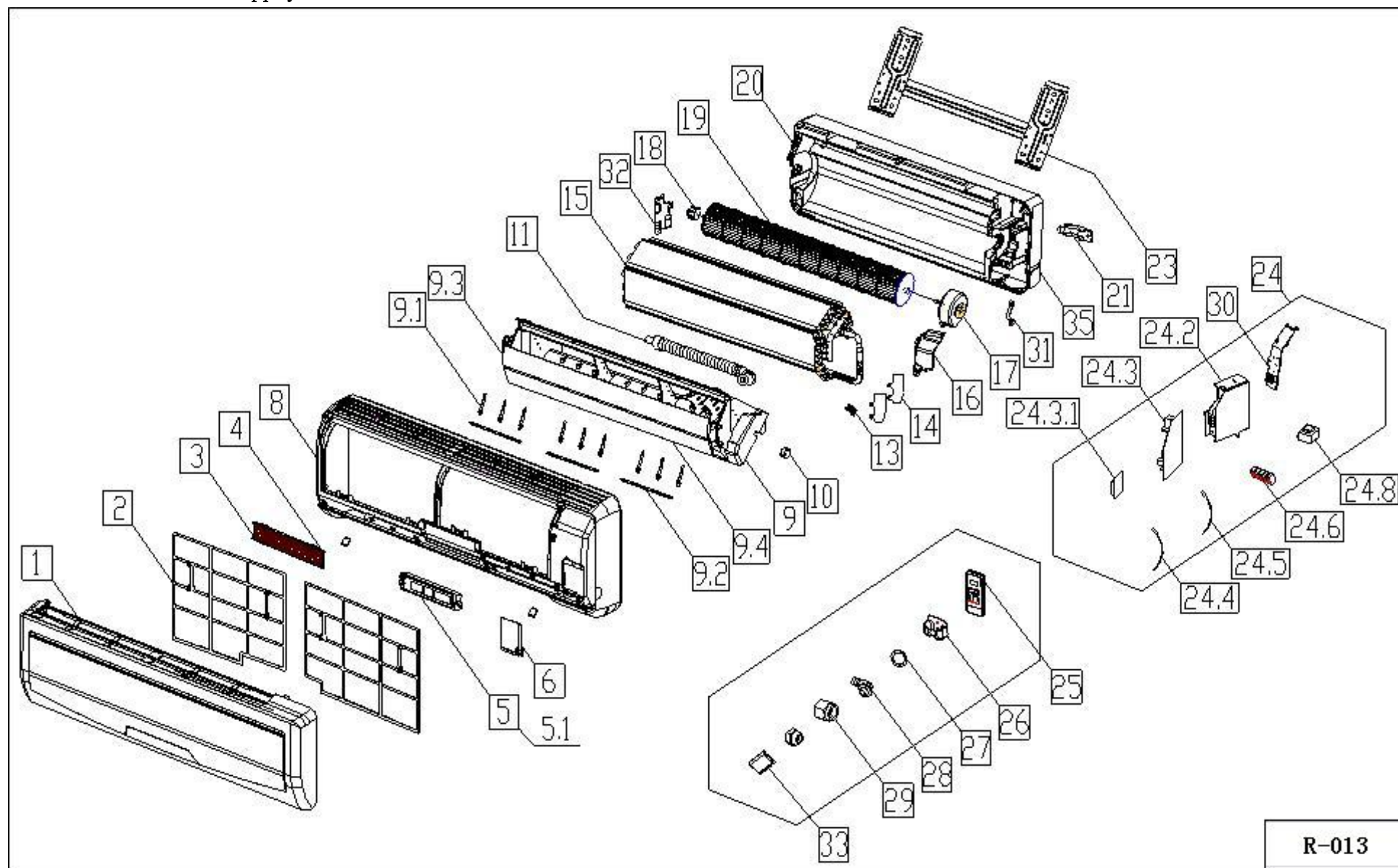


°C

# Exploded View Parts for Model

Sale model: DSB-F0916LH-DV

Power Supply: 220-240V~ 50Hz 1Phase



R-013

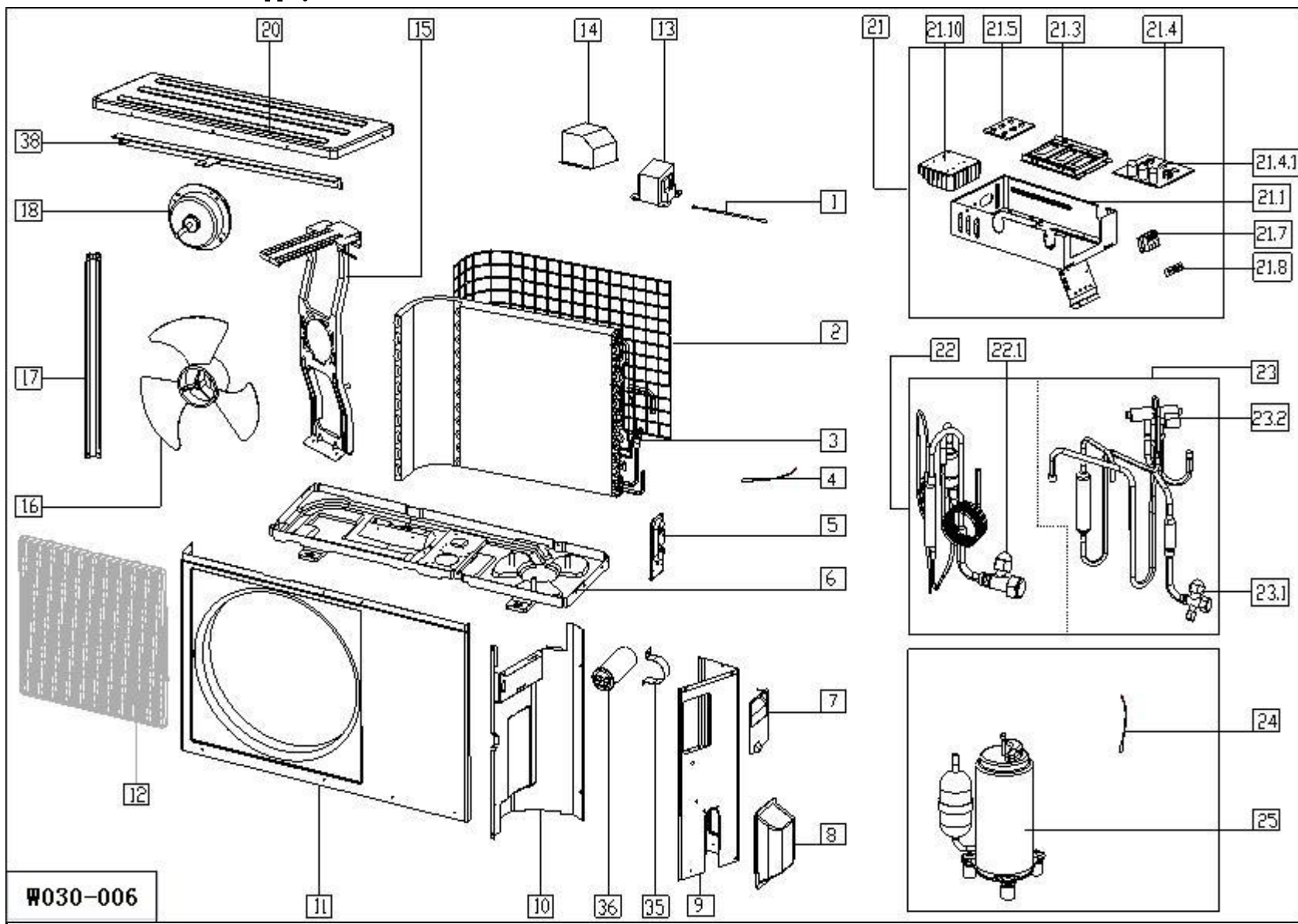
| No. | Part Name                  | Quantity | Codigo        |
|-----|----------------------------|----------|---------------|
| 1   | Front panel assy           | 1        | NO DISPONIBLE |
| 2   | Air filter                 | 1        | 201132390161  |
| 2   | Air filter                 | 1        | 201132390162  |
| 3   | Air cleaner                | 1        | 201130100212  |
| 4   | Air cleaner holder         | 1        | NO DISPONIBLE |
| 5   | Display box assy           | 1        | NO DISPONIBLE |
| 5.1 | Display board assy         | 1        | 201332790095  |
| 6   | Window cover for repairing | 1        | NO DISPONIBLE |
| 8   | Panel frame assy           | 1        | NO DISPONIBLE |
| 9   | Air out frame assy         | 1        | 201132590671  |
| 9.1 | Vertical grille            | 9        | PEDIR.9       |
| 9.2 | Louver holder              | 3        | PEDIR.9       |
| 9.3 | Horizontal louver,up       | 1        | 201132590758  |
| 9.4 | Horizontal louver,down     | 1        | 201132590759  |
| 10  | Louver motor               | 1        | 202400200027  |
| 11  | Drain hose                 | 1        | NO DISPONIBLE |
| 13  | Sensor clamp               | 1        | NO DISPONIBLE |
| 14  | Breakwater                 | 1        | NO DISPONIBLE |
| 14  | Breakwater                 | 1        | NO DISPONIBLE |
| 15  | Evaporator,assy            | 1        | NO DISPONIBLE |
| 16  | Motor cover                | 1        | NO DISPONIBLE |
| 17  | Motor                      | 1        | 202400400213  |
| 18  | Bearing holder             | 1        | 202730190001  |

| No.    | Part Name                          | Quantity | Codigo        |
|--------|------------------------------------|----------|---------------|
| 19     | Cross flow fan                     | 1        | 201100200020  |
| 20     | Chassis                            | 1        | NO DISPONIBLE |
| 21     | Connecting pipe clamp              | 1        | NO DISPONIBLE |
| 23     | Installation plate                 | 1        | NO DISPONIBLE |
| 24     | Electronic control box,indoor unit | 1        | NO DISPONIBLE |
| 24.2   | E-Parts box                        | 1        | NO DISPONIBLE |
| 24.3   | Main control board                 | 1        | 201332390460  |
| 24.3.1 | Wires capacitor                    | 1        | NO DISPONIBLE |
| 24.4   | Indoor temp sensor                 | 1        | 202433190000  |
| 24.5   | Evaporator temp sensor             | 1        | 202301300080  |
| 24.6   | Wire join                          | 1        | NO DISPONIBLE |
| 24.8   | Transformer                        | 1        | 202300900095  |
| 25     | Remote Controller                  | 1        | 2033550A3367  |
| 26     | Holder,Remote Controller           | 1        | NO DISPONIBLE |
| 27     | Seal                               | 1        | NO DISPONIBLE |
| 28     | Connector for watering             | 1        | NO DISPONIBLE |
| 29     | Copper nut                         | 1        | NO DISPONIBLE |
| 29     | Copper nut                         | 1        | NO DISPONIBLE |
| 30     | E-Parts box's cover                | 1        | NO DISPONIBLE |
| 31     | Fixing board for motor             | 1        | NO DISPONIBLE |
| 32     | Fixing board for bear              | 1        | NO DISPONIBLE |
| 33     | Cover board for wiring             | 1        | NO DISPONIBLE |
| 35     | Chassis front cover                | 1        | NO DISPONIBLE |

## Exploded View Parts for Model

Sale model: DSB-F0916LH-DV

Power Supply: 220-240V<sup>~</sup> 50Hz 1Phase



| No.  | Part Name                       | Quantity | BOM code      |
|------|---------------------------------|----------|---------------|
| 1    | Indoor temp sensor              | 1        | 202301300160  |
| 2    | Rear net                        | 1        | NO DISPONIBLE |
| 3    | Condenser coil assembly         | 1        | NO DISPONIBLE |
| 4    | Pipe Temperature Sensor         | 1        | 202440500004  |
| 5    | Valve plate                     | 1        | NO DISPONIBLE |
| 6    | Base pan assembly               | 1        | NO DISPONIBLE |
| 7    | Big handle                      | 1        | NO DISPONIBLE |
| 8    | Water collector                 | 1        | NO DISPONIBLE |
| 9    | Right clapboard                 | 1        | NO DISPONIBLE |
| 10   | Partition plate assembly        | 1        | NO DISPONIBLE |
| 11   | Front panel                     | 1        | NO DISPONIBLE |
| 12   | Front net                       | 1        | NO DISPONIBLE |
| 13   | Reactor                         | 1        | NO DISPONIBLE |
| 14   | Cover for reactance filter      | 1        | NO DISPONIBLE |
| 15   | Motor mounting bracket assembly | 1        | NO DISPONIBLE |
| 16   | Axial flow fan                  | 1        | 201100310603  |
| 17   | Left supporter                  | 1        | NO DISPONIBLE |
| 18   | Asynchronism motor(iron)        | 1        | 202400400154  |
| 20   | Top cover assembly              | 1        | NO DISPONIBLE |
| 21   | Electrical box assembly         | 1        | 203337390138  |
| 21.1 | E-Parts box                     | 1        | PEDIR 21      |
| 21.3 | E-box Installation plate        | 1        | PEDIR 21      |
| 21.4 | Main control board              | 1        | 201337390073  |

| No.    | Part Name                          | Quantity | BOM code      |
|--------|------------------------------------|----------|---------------|
| 21.4.1 | Motor capacitor                    | 1        | PEDIR 21      |
| 21.5   | Inverter control board subassembly | 1        | PEDIR 21      |
| 21.7   | Terminal Block                     | 1        | PEDIR 21      |
| 21.8   | Wire Clip                          | 1        | PEDIR 21      |
| 21.10  | Radiator                           | 1        | PEDIR 21      |
| 22     | liquid valve assembly              | 1        | NO DISPONIBLE |
| 22.1   | Liquid pipe valve                  | 1        | 201600740523  |
| 23     | 4-way valve assy                   | 1        | NO DISPONIBLE |
| 23.1   | Gas valve                          | 1        | 201600720095  |
| 23.2   | 4-way valve                        | 1        | 201600690010  |
| 24     | Discharge temp sensor Ass'y        | 1        | 202301310068  |
| 25     | Compressor                         | 1        | 201400620820  |
| 35     | clip, capacitor                    | 1        | NO DISPONIBLE |
| 36     | Capacitor, Compressor              | 1        | 202401090055  |
| 38     | Support Board                      | 1        | NO DISPONIBLE |