



Split Wall-Mounted Type

Air-Conditioners

Service Manual

KFR-32GW/VWa

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I Photo of the production

A



A

Feature:

1. Stylish and deluxe design
2. Compact size, easy to install and operate
3. Sends out air in gentle stream for physical comfort
4. Use multi-fold evaporator to create the area of heat exchange
5. Intelligent blur defrost
6. Remote control

II Operating Principle

A. Cooling

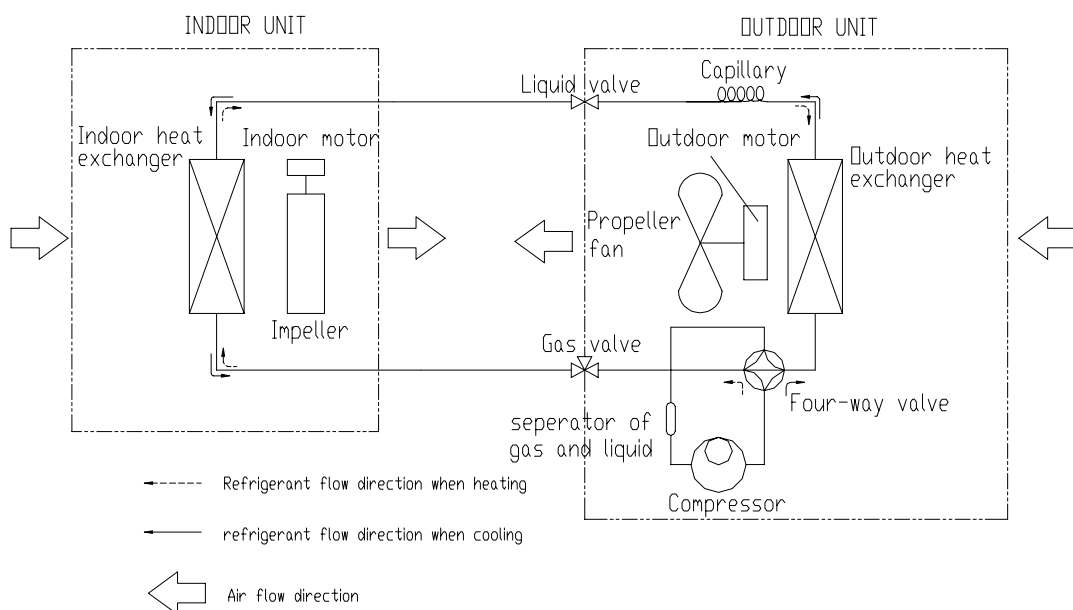
After the power supply is switched on, the machine is set to COOL mode. With the compressor being operated, the low-temperature and low-pressure refrigerant vapor is sucked into the compressor where it is turned into high-temperature and high-pressure gas. Then it is cooled down in the outdoor heat exchanger by the air and becomes liquid. After being throttled by the capillary, the refrigerant liquid comes into the indoor unit and then it evaporates in the indoor heat exchanger, absorbing heat and reducing the room temperature. The evaporated refrigerant vapor returns to the outdoor unit and is again sucked into the compressor, completing the cycle. With the refrigerant cycling being kept on, the objective of lowering the room temperature is fulfilled.

B. Heating

After the power supply is switched on, the machine is set to HEAT mode and the coil of the electromagnetic four-way valve is energized. After the compressor starts to operate, the high-temperature and high-pressure refrigerant gas first comes into the heat exchanger of the indoor unit, where it is cooled, releases heat and increases the room temperature. The cooled high-pressure refrigerant is then throttled in the outdoor unit and returns to the compressor after evaporation. With such cycles being maintained, the objective of increasing the room temperature is fulfilled.

C. System Schematic Diagram

Please see the following Diagram



III Exploded Views of the Production

Detailed part list of KFR-32GW/VWa indoor unit

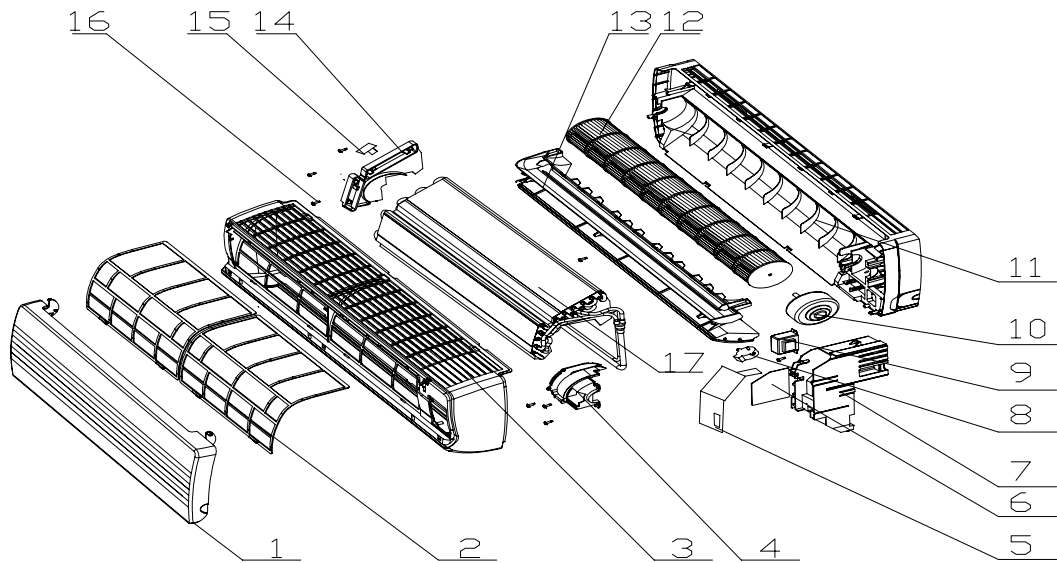
S/N	Part Name	Drawing No.	Part No.
1	Front panel assy	KFR-32G/V.010.00	KFR-32G/VWa 01
2	Air strainer	KFR-23G/T.090.00WX	KFR-32G/VWa 02
3	Upper frame assy	KFR-23G/T101.020.00	KFR-32G/VWa 03
4	Right locating cover	KFR-23G/T.000.06	KFR-32G/VWa 04
5	Electric box cover	KFR-23G/T.000.09	KFR-32G/VWa 05
6	Indoor main control board	KFR-23G/T101.041.00	KFR-32G/VWa 06
7	Electric box	KFR-23G/T.100.01	KFR-32G/VWa 07
8	Step motor	KFR-23G/T.061.00WX	KFR-32G/VWa 08
9	Transformer	KFR-23G/T.100.03WX	KFR-32G/VWa 09
10	Indoor motor	KFR-35G/V.030.00WX	KFR-32G/VWa 10
11	Lower frame assy	KFR-23G/T.030.00	KFR-32G/VWa 11
12	Impeller fan	KFR-23G/T.080.00WX	KFR-32G/VWa 12
13	Water-collecting plate assy	KFR-23G/T.060.00	KFR-32G/VWa 13
14	Left locating cover	KFR-23G/T.041.04	KFR-32G/VWa 14
15	Fixing clip	KFR-23G/T.000.05	KFR-32G/VWa 15
16	Screw ST4*12FT	SJ 2823-87	KFR-32G/VWa 16
17	Evaporator assy	KFR-35G/V.020.00	KFR-32G/VWa 17

Detailed part list of KFR-32GW/VWa outdoor unit

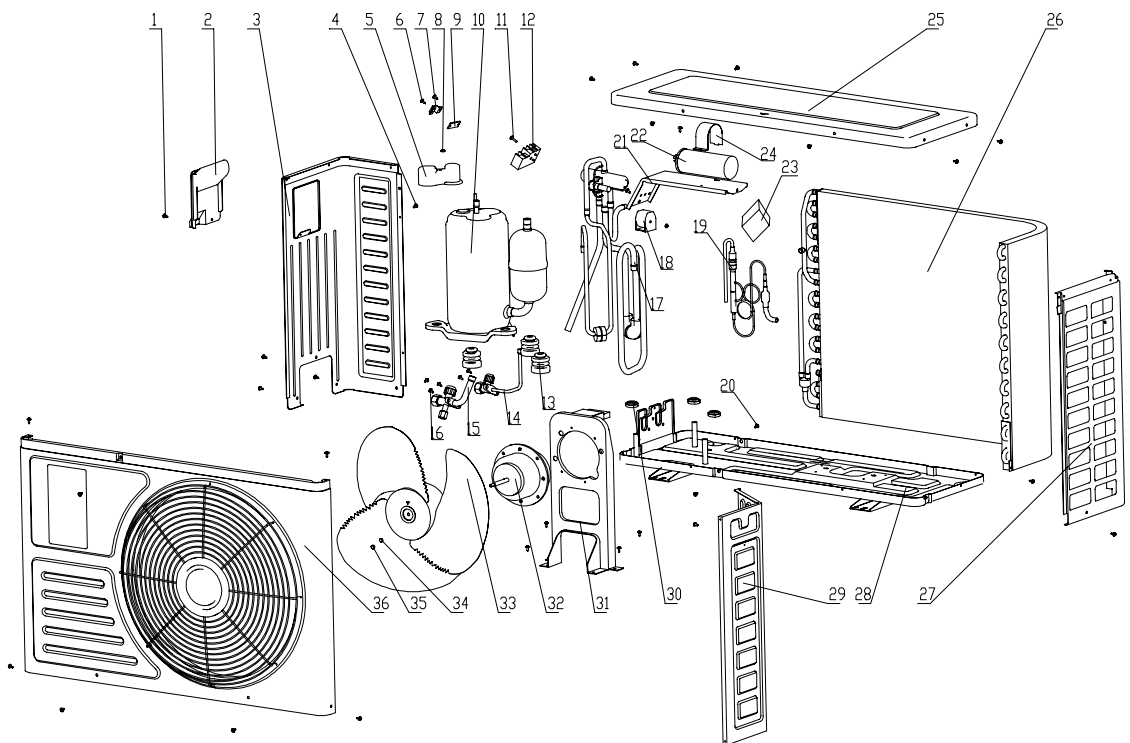
S/N	Part Name	Drawing No.	Part No.
1	Screw ST4*10C	SJ2823-87 (black)	KFR-32W/VWa 01
2	Handle assy	KFR-32W/VWa.030.00	KFR-32W/VWa 02
3	Right rear plate assy	KFR-32W/T1.050.00	KFR-32W/VWa 03
4	Screw ST4*10C	SJ2823-87	KFR-32W/VWa 04
5	Protective cover	Compressor accessory	KFR-32W/VWa 05
6	Screw ST4*12C	SJ2823-87	KFR-32W/VWa 06
7	Wire clip cover	KFR-22WA.050.04	KFR-32W/VWa 07
8	Nut	Compressor accessory	KFR-32W/VWa 08
9	Wire clip base	KFR-22WA.050.03	KFR-32W/VWa 09
10	Compressor	ASL145SV-C7LU	KFR-32W/VWa 10
11	Screw ST4*20C	SJ2823-87	KFR-32W/VWa 11
12	Terminal board	KFR-27W/H.060.02WX	KFR-32W/VWa 12
13	Shock absorber	KFR-50W/W.000.07WX-G	KFR-32W/VWa 13
14	Liquid valve	KFR-32W/VWa.040.00WX	KFR-32W/VWa 14
15	Gas valve	KFR-32W/VWa.050.00WX	KFR-32W/VWa 15

16	Screw ST6*18C	KFR-35W/H1.000.03WX	KFR-32W/VWa 16
17	Four-way valve assy	KFR-32W/VWa.010.00	KFR-32W/VWa 17
18	Coil of four-way valve	KFR-27W/H.000.00JL-03WX	KFR-32W/VWa 18
19	Capillary pipe assy	KFR-32W/VWa.060.00	KFR-32W/VWa 19
20	Screw ST4*10C	SJ2823-87	KFR-32W/VWa 20
21	Electric plate welding assy	KFR-32W/V.030.00	KFR-32W/VWa 21
22	Compressor capacitor	KFR-32W/V.030.01WX (CBB65-1K 35?F 450VAC)	KFR-32W/VWa 22
23	Outdoor fan motor capacitor	KFR-23W/T101.010.08WX (CBB61A 1.5 ?F 450VAC)	KFR-32W/VWa 23
24	Capacitor clamp A	Q/321200GF114-2003	KFR-32W/VWa 24
25	Top plate	FFR-32W/T1.010.01	KFR-32W/VWa 25
26	Condenser assy	KFR-32W/V.020.00	KFR-32W/VWa 26
27	Left rear plate	KFR-32W/T1.000.02	KFR-32W/VWa 27
28	Base plate assy	KF-35W/T2.020.00	KFR-32W/VWa 28
29	Middle partition welding assy	KFR-32W/V.051.00	KFR-32W/VWa 29
30	Nut with washer	Q/321200CL120-2002	KFR-32W/VWa 30
31	Motor bracket assy	KFR-32W/T1.150.00	KFR-32W/VWa 31
32	Outdoor motor	KFR-35W/V.080.00WX	KFR-32W/VWa 32
33	Propeller fan	KFR-32W/T1.120.00WX	KFR-32W/VWa 33
34	Washer 6	GB/T 93-1987	KFR-32W/VWa 34
35	Nut M6	GB/T 6170-2000	KFR-32W/VWa 35
36	Front plate assy	KFR-32W/T1.020.00	KFR-32W/VWa 36

KFR-32GW/VW_a I NDOOR EXPLODE VIEW



KFR-32GW/VW_a OUTDOOR EXPLODE VIEW



IV. Lists of Common Wearable Parts

List of Wearable Parts of KFR-32GW/VW

No.	Description	Model	Specification
1	Remote controller	KFR-23GW/T.010.00WX(A)	
2	Indoor temp sensor	KFR-22GA.000.00JL-04WX	
3	Indoor pipe temp sensor	KFR-22GA.000.00JL-05WX	
5	Indoor main control board	KFR-23G/T101.041.01	
6	Display & receive board	KFR-23G/T.100.12WX	
7	Transformer	KFR-23G/T.100.03WX	
8	Step motor	KFR-23G/T.061.00WX	
9	Impeller fan	KFR-23G/T.080.00WX	
10	Indoor motor	KFR-35G/V.030.00WX	
11	Propeller fan	KFR-32W/T1.120.00WX	
12	Outdoor motor	KFR-35W/V.080.00WX	
13	Compressor capacitor	KFR-32W/V.030.01WX	35uF/450VAC
14	Outdoor motor capacitor	KFR-23W/T101.010.08WX	1.5uF/450VAC

✓. Main Technical Data and Cooling and Heating Characteristic Curves

1. Main technical data:

Model		KFR-32GW/VWa
Cooling capacity	W	3262
Heating capacity	W	3682
Air flow	m ³ /h	500
Power supply	V, Hz	1PH 230, 50
Rated input current for cooling	A	4.68
Rated input current for heating	A	4.74
Rated input power for cooling	W	1012
Rated input power for heating	W	1021
Max. input power for cooling	W	1440
Max. input power for heating	W	1460
Noise dB(A)	Indoor unit	38
	Outdoor unit	52
Net dimensions (D×W×H) cm	Indoor unit	19.0×74.5×25.0
	Outdoor unit	25.9×76.0×53.7
Packing dimensions (D×W×H) cm	Indoor unit	29.0×86.0×35.5
	Outdoor unit	35.2×89.6×60.0
Net weight kg	Indoor unit	7
	Outdoor unit	30
Gross weight kg	Indoor unit	9
	Outdoor unit	35
Refrigerant	Material	R410A
	Charge	kg 0.70
Power plug cord diameter	mm	φ7.4
Pipe size inch	Liquid pipe	1/4"φ
	Gas pipe	1/2"φ
Temperature control range	℃	15~30
Environmental temperature range	℃	-7~43
Compressor brand/model		HITACHI/ASL145SV-C7LU

Notes: 1. Rated conditions:

(1) Cooling: Inside	Dry-bulb temp.	27°C	Outside: Dry-bulb temp.	35°C
	Wet-bulb temp.	19°C	Wet-bulb temp.	24°C
Heating: Inside	Dry-bulb temp.	20°C	Out side: Dry-bulb temp.	7°C
	Wet-bulb temp.	15°C max.	Wet-bulb temp.	6°C

(2) Standard length of pipe connection m: 3.6

(3) Horizontal grille is set in initial position, and the indoor fan speed is high.

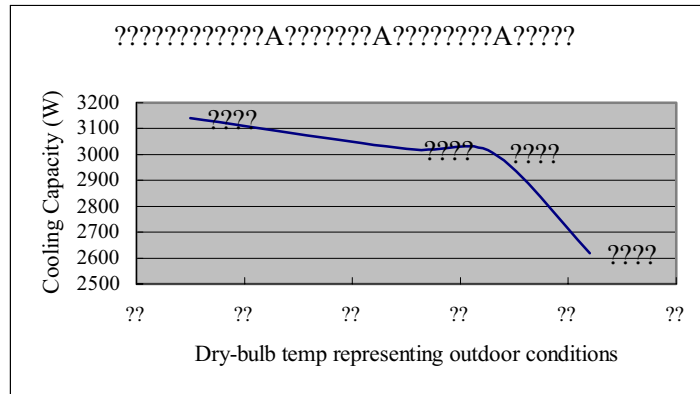
2. Maximum conditions:

Cooling: Inside	Dry-bulb temp.	32°C	Outside: Dry-bulb temp.	43°C
	Wet-bulb temp.	23°C	Wet-bulb temp.	26°C
Heating: Inside	Dry-bulb temp.	27°C	Outside: Dry-bulb temp.	24°C
			Wet-bulb temp.	18°C

3. The data are only for reference, for details please see label of the unit.

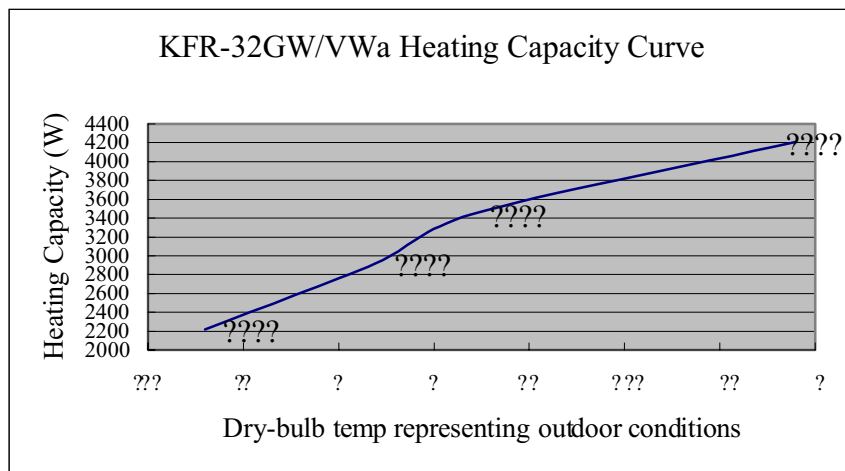
2. Data for cooling capacity curve:

Operating conditions Index	Indoor conditions			
	Dry bulb 21°C	Dry bulb 27°C	Dry bulb 32°C	Dry bulb 32°C
	Wet bulb 15°C	Wet bulb 19°C	Wet bulb 23°C	Wet bulb 23°C
	Outdoor conditions			
Dry bulb 15°C	Dry bulb 35°C	Dry bulb 43°C	Dry bulb 52°C	
	Wet bulb 24°C	Wet bulb 26°C	Wet bulb 32°C	








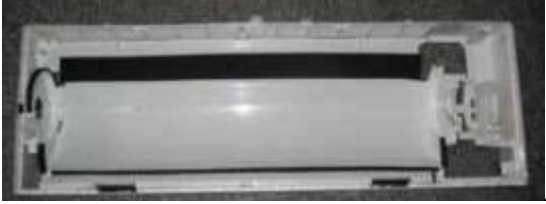
5. Data for heating capacity curve:

Operating conditions Index	Indoor conditions			
	Dry bulb 20°C	Dry bulb 20°C	Dry bulb 20°C	Dry bulb 27°C
	Wet bulb 15°C	Wet bulb 15°C	Wet bulb 15°C	
	Outdoor conditions			
Dry bulb -7°C	Dry bulb 2°C	Dry bulb 7°C	Dry bulb 24°C	
	Wet bulb 1°C	Wet bulb 6°C	Wet bulb 18°C	



// Dismantling Procedure

Indoor Unit

Operating step	Photo
1. Remove the panel.	
<p>????????A?????A?????A????A ??? Remove the air strainers. ??? Remove two screw covers and take off three screws of upper frame. ??? Remove the upper frame.</p>	
<p>3. Remove the electric box (1) Remove one screw of electric cover, remove the electric cover. (2) Remove the screw of earthing wire, and take off the sensors. (3) Remove the wires and one screw, remove board and electric box.</p> <p>A</p>	
<p>A 4. Take off one screws of water-collecting plate and remove water-collecting plate.</p>	
<p>A 5. Take off two screws of left locating cover and two screws of motor fastener. Remove evaporator.A</p>	
<p>6.Remove impeller fan and indoor motor a) Remove the four screws of motor fastener b) Remove the screw of impeller fan. Remove the motor and impeller.A</p> <p>A A</p>	

OUTDOOR UNIT

Operating step	Photo
1. Remove the top cover (six screws).	
2. Remove the front plate and right plate	
3. Remove the handle	

4. Remove the left plate



5. Remove the propeller fan and outdoor fan motor.



7. Remove middle separate plate and electric. Remove compressor's cover and protector. Remove four-way valve wire.



VII Fault Analysis of the Product Available and Typical Examples

1 Procedure of deciding the faults

Before maintaining the air conditioner, firstly you should know the phenomena of the faults, decide the location of the faults, analyze the reason the faults occur, and

then search for ways to solve the faults . The detailed procedures are: Look, Listen, Touch, Measure, Analyze:

① Look: Observe air conditioner's running. I.e., vibration; condensation on evaporator; leakage; electrical and mechanical connection, etc.

② Listen: Listen to kinds of sounds of the running air conditioner. Identify the abnormal noise from the sounds.

③ Touch: Touch the key position and position faulty. Touch the temp of air flow to decide the heating or cooling effect; as far to abnormal sound, besides adopt listen, you should touch the frame, the pipe of the air conditioner to feel the vibration. Touch the easily heated parts, i.e. compressor, motor, touch them to feel the temp.(Warning: High temp).

④ Measure: Measure the parameters of the air conditioner and relevant parts by some instruments. Usually used instruments: amperemeter, voltmeter, multimeter, thermometer, etc, i.e., Use multimeter to test whether the capacitor is open, the insulation of the wire and the parameters of other electrical parts; use the thermometer to measure temp of airflow.

⑤ Analyze: Analyze the above results, decide the reason and location of faults, and seek the solutions.

2 Types of Normal Faults

The type of faults is various. The normal faults can come down to six types: leaks, block, open circuit, burnt, lock, scrape.

① Leak: Mainly is leakage of R410A from cooling pipe system and parts; leakage of condensation water from indoor units; electrical leakage from electrical system and wires.

② Block: Mainly is block of the pipe system, block of capillary, block of strainer or valve.

③ Open Circuit: Mainly is open circuit of electrical circuit, include: fuse blowing out, connectors broke.

④ Burnt: Mainly is burnout of fan motor, of compressor, of capacitor, of transformer.

⑤ Lock: Mainly is lock of compressor, four-way valve.

⑥ Scrape: Mainly is scrape of indoor/outdoor fan and nearby parts, and sound abnormally.

3 Examples

3.1 Leakage and seepage of indoor unit

Reason	Check to be made	Proposed remedy
Improper installation. Indoor drain position is lower than outdoor or slanting installation of indoor unit	Observe if the condensation water drain out, if the indoor unit is declining	Level the indoor unit and adjust the height
Water collecting plate is blocked	Check if the plate is blocked	Remove the matters block the plate
Water collecting plate or drain pipe is cracked	Check the location, ensure if it is cracked	Replace the plate or pipe
Loosen wrap belt, heat-preservation layer is bad or layer behind indoor units is bad	Connecting pipe bleed the water, condensation water exists behind the indoor unit, the wall is wet and turn colors	Rewrap the connecting pipe, add new heat-preservation layer

High ambient relative humidity, low temp/speed of air flow	Water is blow out from air outlet, or water drips from the outlet. Lower speed of air flow	Suggest set the unit s to dehumidifying mode at high speed of air flow, to lower relative humidity; if the high speed is still felt lower, the fan motor must be checked
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3.2 Poor cooling or heating effect

Reason	Check to be made	Proposed remedy
The cooling/heating load of the room is heavy or the room is not closed perfectly	Calculate the area of the room, check the close of the room	Enlarge the capacity of the units, improve the leakproofness of the room
Insufficient refrigerant R410A	Measure the operating current	Add R410A , welding the leaked point
Too much R410A	Air intake temp is too low , condensation water on air intake pipe is too much, temp of discharge is too high	Discharge a little R410A
Effect of heat exchange is too poor	Dust on outdoor condenser and indoor filter is too much	Cleanup filter and condenser
Some of the windings of motor fan is short-circuit, so cause speed decline	Speed of indoor/outdoor fan is too low, air circulation is small	Repair or replace motor
Running condition is too bad	Check if the installation is proper; outdoor temp is too high when heating	Improve the condition, use auxiliary heating
Convexity exists in compressor or valve or lock of compressor	No high-low pressure difference, no clear temp difference in air intake inlet or discharge outlet of compressor	Replace compressor or valve
Openness of check valve is too small or the system partly or completely blocked	Check the openness; partly frost on outdoor pipe system	Open the valve; use high pressure N ₂ to clean out the block

3.3 Big noise or abnormal sound

Reason	Check to be made	Proposed remedy
Foreign matters in wind guide or impeller fan	Check if they are	Clear away
Fan is distorted or in bad balance	Check them	Replace indoor/outdoor fan
Improper location of fan, so fan touches the housing	Open the unit or move the fan manually, find the location	Adjust the position
Bearing of the fan is sluggish or destroyed	Check the bearing	Replace the bearing
Connecting pipe vibrates due to improper installation, or touch the lower frame	Check the connecting pipe	Tidy up the pipes, eliminate the noise source
Outdoor pipes touches	Check the vibration of the pipes, check if them touch	Tidy up the pipes
Abrasion of the parts of compressor	Check if the sound of compressor is normal	Replace the compressor

3.4 Frequently switch on/off of the compressor

Reason	Check to be made	Proposed remedy
Running voltage is too low	Measure the voltage	Add measures of voltage stabilization
Discharge temp is too high caused by insufficient of R407C, compressor is protected by overheat	Check condensation of air intake pipe or measure if operating current is lower than rated current	Check leakage point, welding or add R410A
Temp sensor is too close to evaporator or moved	Check the position of sensor	Adjust the position or replace the sensor
Air inlet/outlet of heat exchange is blocked or low speed of fan motor; indoor air filter is too dirty or blocked	Check indoor/outdoor heat exchange, speed of motor, air inlet/outlet	Cleanup the filter, remove the obstacle
Too much R410A	Too much condensation water on air intake pipe, high operating current	Discharge a little R410A
Bad insulation of compressor, high operating current, overcurrent proof	Check start or operating current	Replace compressor
Improper temp set	Check actual ambient temp	Reset

3.5 Promptly protected by halt after compressor starts

Reason	Check to be made	Proposed Remedy
Insufficient R410A	Little or no condensation water on air intake pipe, operating current is lower than rated current	Add R410A
Mixed with air in the system, vacuum is not good	Power varies when running	Vacuumize the system, recharge R410A
Blocked caused by water or impurity	Operating current is lower than rated current, part of the unit frosts heavily	use high pressure N ₂ to clean out the block, revacuumize and recharge R410A
Damaged compressor, high start current	Check the windings and insulation of compressor and if it is locked	Replace the compressor

3.6 The units blow out cool air when in heating mode

Reason	Check to be made	Proposed Remedy
Four-way valve doesn't work	Listen to the units if there is sounds of valve's working when heating or cooling	Replace the valve
Faults of control interrupter or other relevant circuits of the valve	Check the circuit	Repair or replace the control board
Insufficient R410A causes the insufficient heating capacity	Little condensation water on outdoor air intake pipe, low operating current	Add R410A

Connexity of compressor	Same temp of a ir intake inlet and discharge outlet of the compressor, no condensation in air intake inlet	Replace the compressor
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3.7 The units doesn't work

Reason	Check to be made	Proposed Remedy
Bad connection of the power plugs, or no power plug	Check the socket	Repair or replace
Outdoor fuse or indoor fuse is burnt	Check if the fuse is good	Replace the fuse
Low voltage	Measure the voltage	Heighten the voltage of the power supply system
Wrong indoor temp set	Measure actual indoor temp, compare to the set temp (in cooling set temp should be lower than the actual, in heating, is higher)	Reset the temp
Wrong running mode of indoor units set	Check if running mode of two indoor units is the same (it is not available if one is heating and another is cooling)	Reset

3.8 Cannot receive the remote control signal

Reason	Check to be made	Proposed Remedy
Damaged remote control or low battery	Check if the indication is normal	Replace the remote control or battery
Short-circuit of connections of main control board to switch board	Check the board	Replace the components
Running mode of two indoor units is not the same	Check if one is heating and another is cooling	Reset
Indoor units are in test mode	Open the air intake grill to see the running mode	Adjust test mode to remote control mode

Remarks: The above-mentioned 'faults' are the faults possibly occur, we will continue to collect the faults and analysis.