



PORTABLE AIR CONDITIONER (LOCAL)

ORION / ORION PLUS



SERVICE MANUAL

Read the instructions carefully before operating the appliance or carrying out maintenance work. Observe all the safety instructions; failure to observe the instructions may lead to accidents and/or damage. Store these instructions in a safe place for future reference.



Appliance filled with flammable gas R290.



Before installing and using the appliance, read the owner's manual.



Before repairing the appliance, read the service manual.

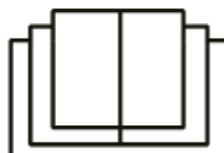
The Refrigerant R290

- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The refrigerant is the fluoride R290 = 3 GWP (Global warming potential). This refrigerant is flammable and inodorous. It can lead to explosions under certain conditions, however the flammability of this refrigerant is very low and it can be ignited only by fire.
- Compared to other common refrigerants, R290 is a non-polluting refrigerant with no harm to the ozonosphere and a no effect upon the greenhouse effect. R290 has very good thermodynamic features which lead to a really high energy efficiency. The units therefore need less filling.

Warning:

Do not try to accelerate the defrosting process or to clean the appliance in different ways other than those recommended by the manufacturer. Should repair be necessary, contact your nearest authorized Argoclima Service Centre. Any repairs carried out by unqualified personnel may be dangerous. The appliance has to be stored in a room that doesn't have any continuously operating ignition sources. (for example: open flames, an operating gas appliance or an operating electric heater.) Do not pierce or burn.

Appliance has to be installed, operated and stored in a room with a floor area larger than 12 m². For repairs, strictly follow manufacturer's instructions only for appliances filled with R290 flammable gas. Be aware that refrigerants do not have any odour.



Safety Principles for Installing Air Conditioner

- Fire prevention device shall be prepared before installation.
- Keep installing site ventilated.(open the door and window)
- Ignition source, smoking and calling is not allowed to exist in area where R290 refrigerant located.
- Anti-static precautions in necessary for installing air conditioner, e.g. wear pure cotton clothes and gloves.
- Keep leak detector in working state during the installation.
- If R290 refrigerant leakage occurs during the installation, you shall immediately detect the concentration in indoor environment until it reaches a safe level. If refrigerant leakage affects the performance of the unit, please immediately stop the operation, and the unit must be vacuumed firstly and be returned to the maintenance station for processing.
- Keep electric appliance, power switch, plug, socket, high temperature heat source and high static away from the area underneath sidelines of unit.
- The unit shall be installed in an accessible location to installation and maintenance, without obstacles that may block air inlets or outlets of units, and shall keep away from heat source, inflammable or explosive conditions.

1. Malfunction diagnosis

1-1 Items to be checked at first

1. Input voltage must be in the range of $\pm 10\%$ of rating voltage, if work voltage of air conditioner is outside of this range, air conditioner will possibly not run normally. (Enough power supply capacity must be provided)

2. Make sure the good connection between power supply plug and power supply, otherwise air conditioner will not run normally.

3. The phenomenon listed in below table occurred, which are not caused by air conditioner failure:

No	Phenomenon	Description
1	While the power supply pin plug into socket at first time and sound "tick" is heard, but air conditioner does not run.	Which indicates air conditioner is energized, as long as press "ON/OFF" on display panel or on remote controller, and the signal is received by air conditioner, which means entering setting operation..
2	While power supply pin plug into socket, the indicator lamp of "water full" flickering continuously on display panel and "tick" sounding continuously, pressing "ON/OFF" but air conditioner does not run and fan runs only.	Water of tank is not put out.
3	under dehumidifying mode, compressor does not run continuously	Under dehumidifying mode, air conditioner will control compressor work status automatically according to indoor air temperature
4	Presetting LED lamp lights on, but air conditioner does not run	Timer is in timing status and air conditioner is in standby status; if cancel timing operation, air conditioner will recover to normal status.
5	Under cooling mode, while setting temperature above room temperature, compressor does not run	Setting temperature means a temperature point of ambient temperature decreases upto by way of operation of air conditioner under cooling. While the setting temperature decreases below room temperature, compressor will run.
6	under cooling、heating or dehumidifying mode, while air conditioner switches off and immediately switches on, only fan runs but compressor does not run	While air conditioner switches off and switches on soon, and air conditioner provides a three-minute delay protection function; three minutes later, compressor will restart to run.

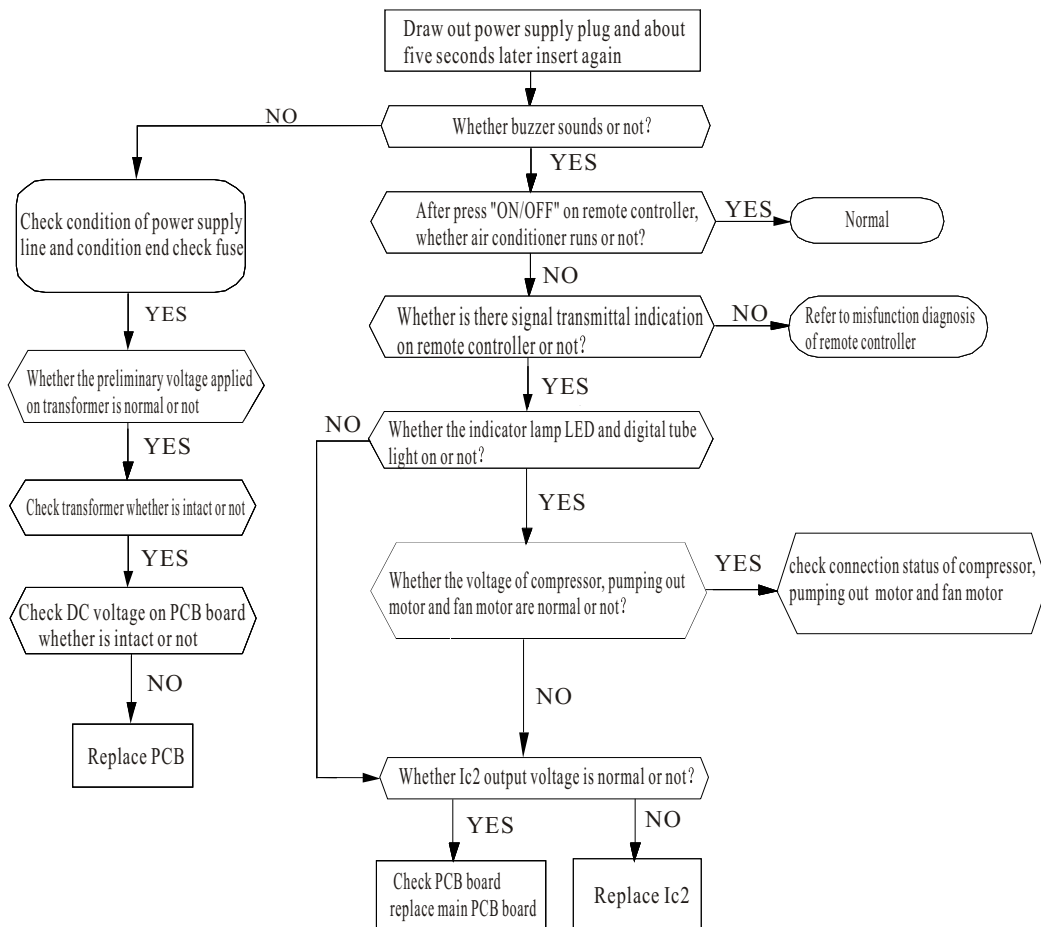
1-2 Guide to malfunction diagnosis

1-2-1 No power supply (completely no work)-preliminary diagnosis

1. Items to be checked:

- 1) Whether input voltage is right or not?
- 2) Whether the connection of AC power supply is right or not?
- 3) Whether the output voltage of manostat 7805(IC1) is right or not?

2. Flow chart of malfunction diagnosis

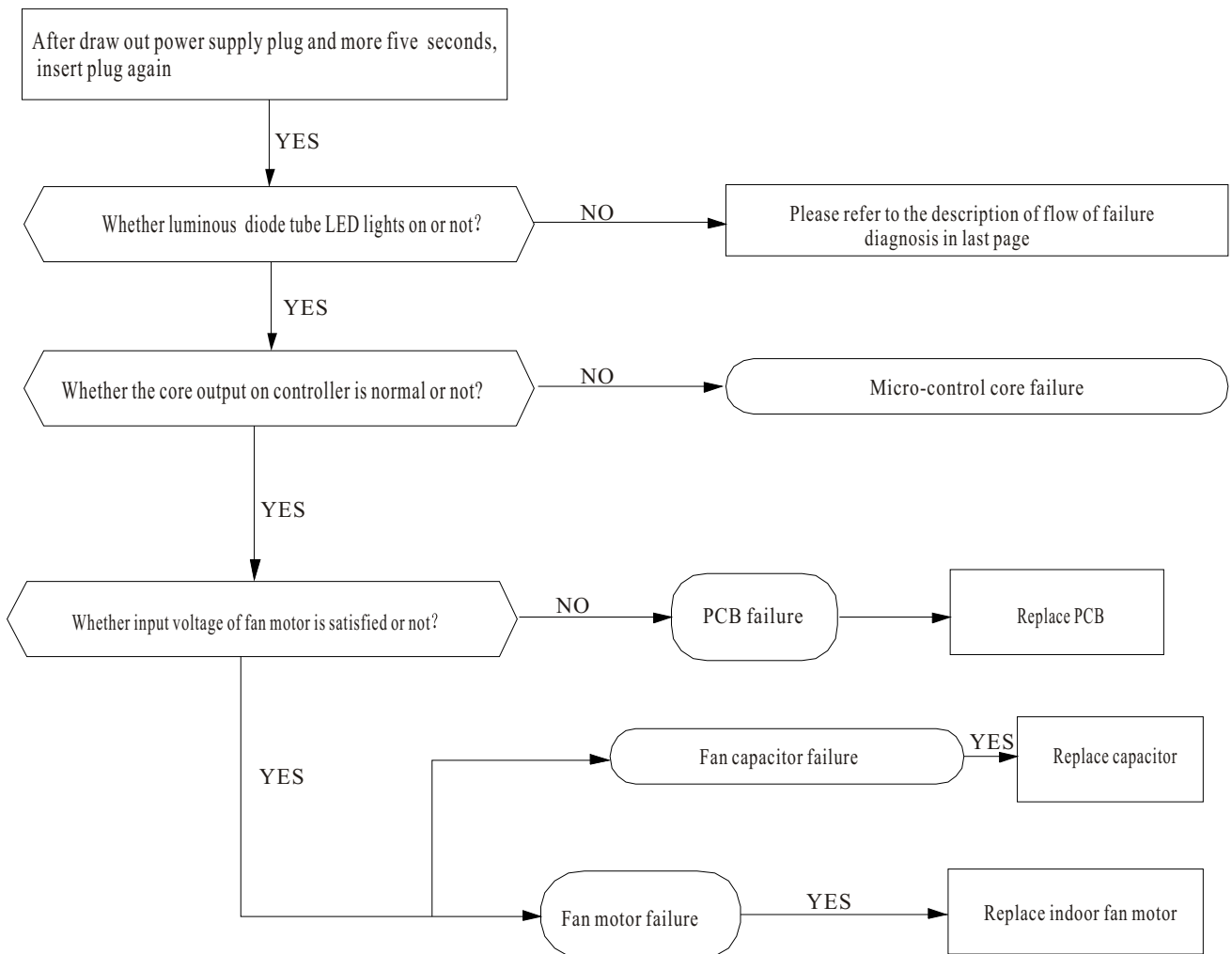


1-2-2 Indoor fan motor does not run

1. Items to be checked:

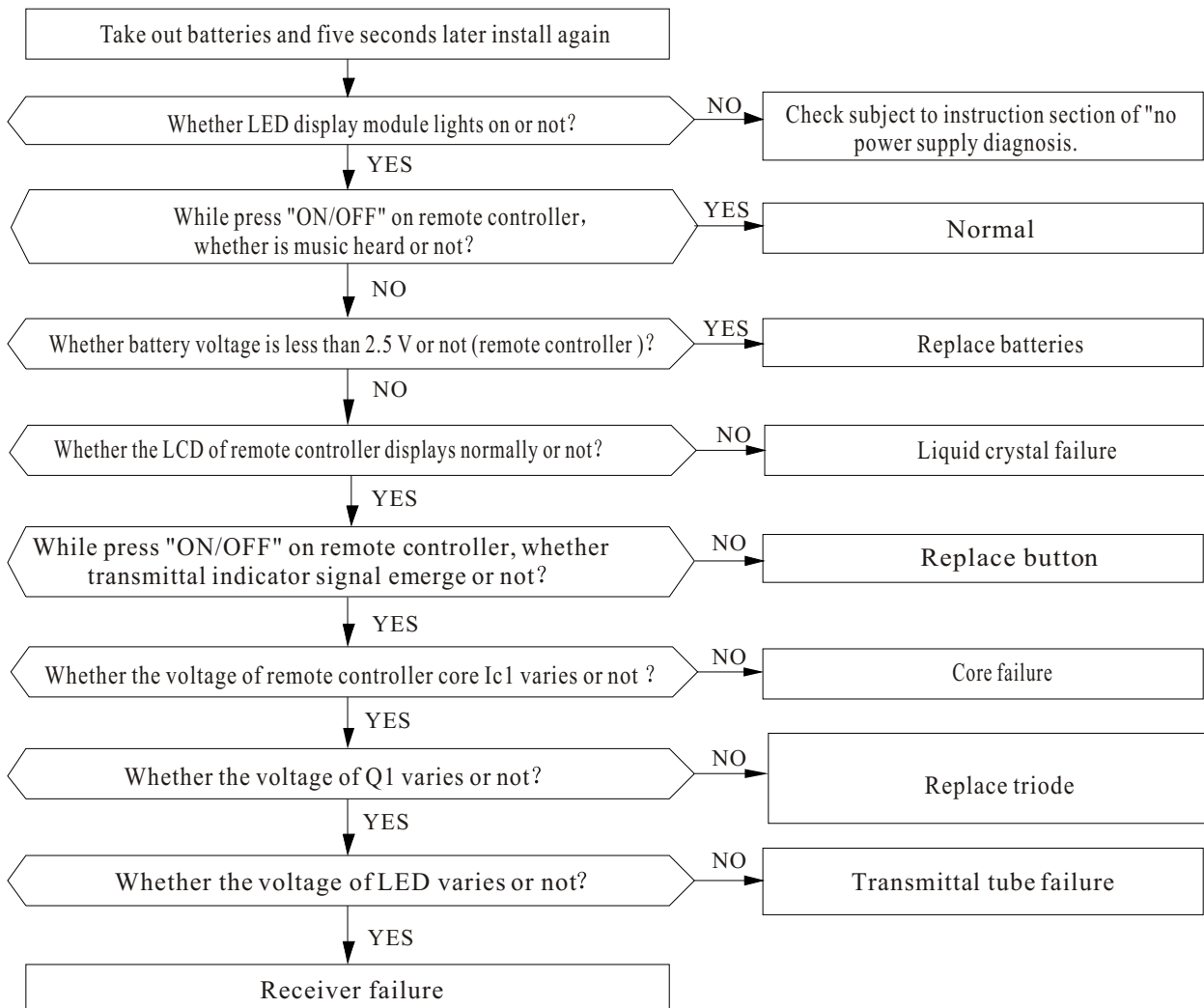
- 1) Whether indoor fan motor is connected with connector (X8) in a right way?
- 2) Whether the input voltage of AC power is right or not?
- 3) Whether the operation capacitor of indoor fan motor is connected with connector CN10、CN11) in a right way or not?

2. Flow chart of malfunction diagnosis



1-2-3 Remote control can not be used

1.Flow chart of malfunction diagnosis



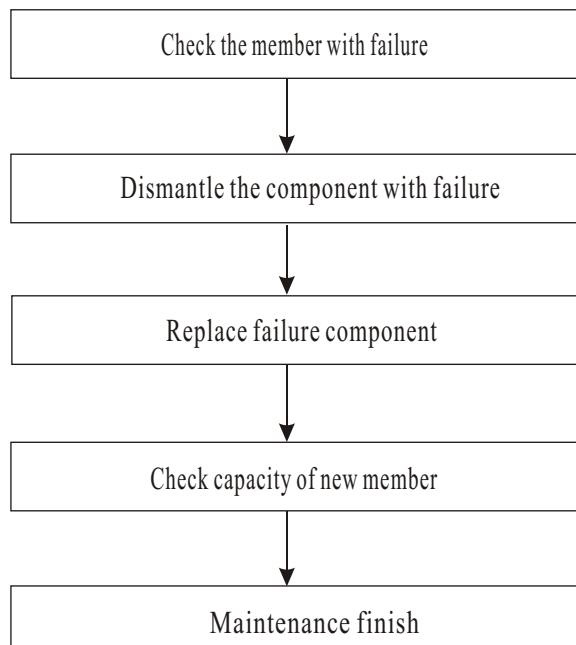
1-3 PCB check

1-3-1 points for attention while replace parts

1. Make sure that human body is grounded as a safety way or not before execute reparation and parts replacement due to human body carrying electrostatic, especially before contact some micro-computer or integrated circuit, confirm to discharge electrostatic completely (make sure whether wear an effective grounding ring in the wrist or not)
2. While execute a live reparation of parts on work bench, make sure that a insulating cushion must be provided and no metallurgic fragments on cushion. If any metallurgic fragments contact with parts, possibly, damage other section of parts.
3. Power supply must be cut off before replace components, if perform a live operation, possibly, results in electric shock, short and other damage.
4. During parts replacement or reparation, make sure that: conduct wire on circuit panel (whether there is jumper loop or not); diode location. Conduct wire and member are damaged resulting from easy to bend and shock due to coarse treatment for circuit panel.
5. Clean the conduct wire and new member by sand paper and etc before welding, otherwise the welding material will be possibly adhered to conduct wire and parts due to oxidation.
6. Avoid using electric iron with high-efficiency to weld for a long time while welding, otherwise the members with low heat resistance are easy to be damaged.
7. The quantity of heat of electric iron should be spreaded all over the object welded, otherwise welding will not be performed very well.
8. Welding material should be as little as possible while welding, too much welding material possibly causes circuit failure.

1-3-2 Process

Replace member subject to the flow as followed:



1-3-3 Detailed process

No	Malfunction	Check point	Reason
1	Disconnection power supply and check fuse on PCB	Damage or not?	<ul style="list-style-type: none"> ● Voltage exceeding ● Fan motor short
2	Connect with power supply	Check voltage	<ul style="list-style-type: none"> ● Rectification circuit mistake ● Drop-down transformer does not work
		1. Whether is there normal AC voltage on XB or not? 2. The DC voltage on IC5 : input→DC12V : output→DC5V	
3	Special protection mode	Check voltage	Circuit malfunction
		1. Check the control load for various relays : Relay disconnect→0.5V : Relay connect→6V	<ul style="list-style-type: none"> ● Relay malfunction

Trouble shooting guide

Error code display:

When Air conditioner has problem, the display will show different error code related to different problems.

Reason	Display	Solution
TA abnormal(broken circuit or short circuit)	"E1"	See the detail solution
TE abnormal(broken circuit or short circuit)	"E3"	See the detail solution
TW abnormal(broken circuit or short circuit)	No error code	No error report, stay the same
Water full	"P1"	See the water full alarm function

Error solution :

1. TA abnormal, indoor shows E1 keep lighting, air conditioner can run without any stop except the heating mode, other protection still valid. If under auto mode to choose the mode according to the environment temperature, please choose fan mode to run. If under cooling mode, the machine continuous running, if under dehumidifier mode, fan motor and compressor do not working, the up motor is set with low fan speed.

2. If under cooling or dehumidifier mode, TE abnormal, indoor will show "E3" keep lighting. The normal anti-frozen protection function no more working. Cooling, dehumidifier mode, carry out stopped for 5min after compressor continuous working more than 30min. If under heating mode, indoor shows"E3" keep lighting, air conditioner will stop running.

3. TE and TA happen during the same time, TE error code's special operation status will has priority

4. "P1" indicates that water inside the AC is full, user needs to take out the water tank and remove the water inside.

Remarks :

TA: Indoor environment temperature

TE: evaporator coil temperature

TS : Set temperature

TW : Condenser coil temperature ;

REGULATION (EU) No. 517/2014 – F-GAS

The unit contains R290, a natural greenhouse gas with global warming potential (GWP) = 3 - Kg. 0.21 = 0.00063 Tons CO₂ equiv.

Do not release R290 into the atmosphere.



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www.argoclima.com