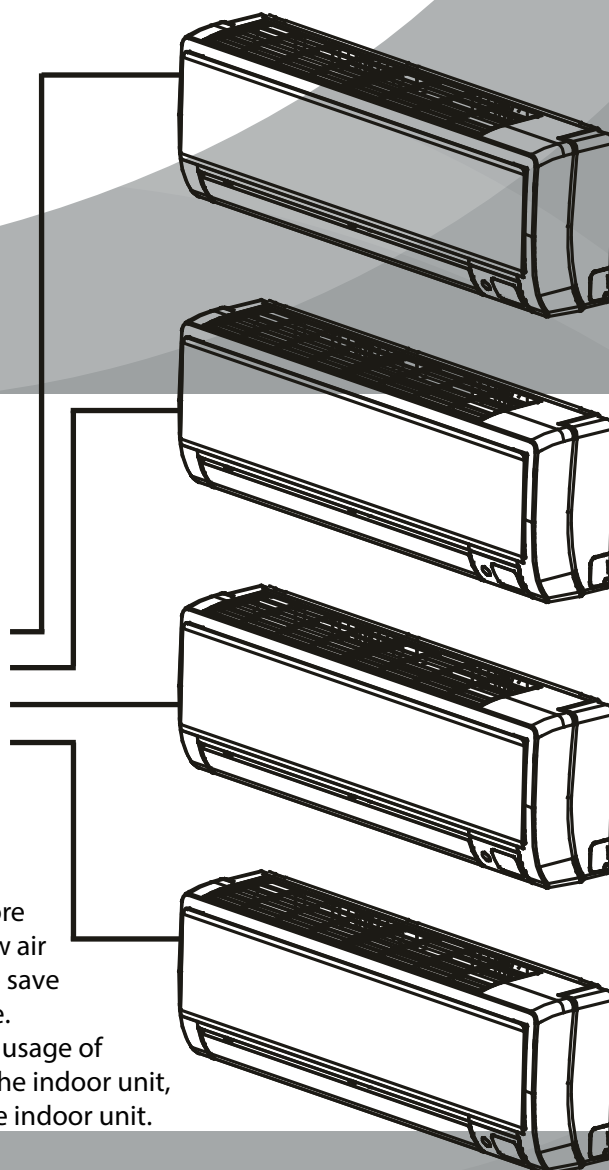
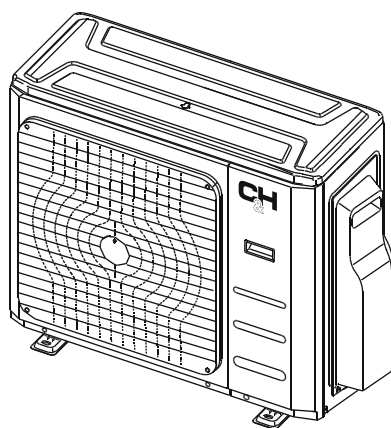


# SOPHIA MULTI-ZONE INVERTER

**SPLIT AIR CONDITIONER  
WITH HEAT PUMP**

## USER'S MANUAL **OUTDOOR UNIT**

**Models:**  
CH-18MSPH-230VO  
CH-28MSPH-230VO  
CH-36MSPH-230VO  
CH-48MSPH-230VO

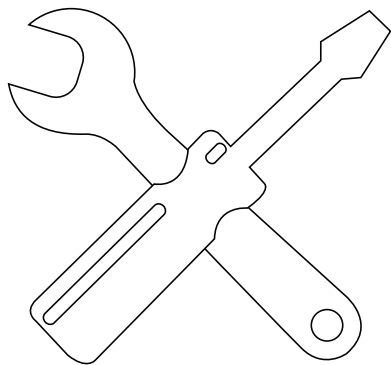
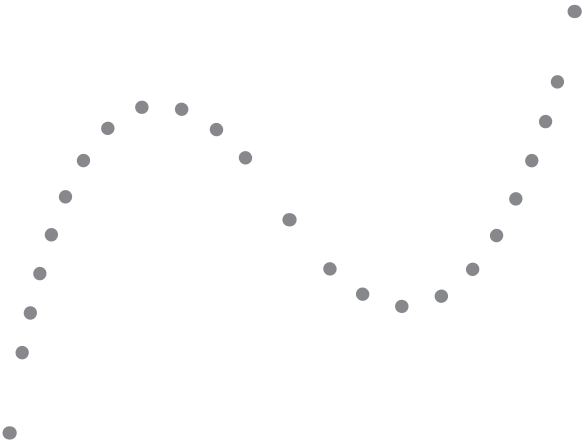


**IMPORTANT NOTE:**

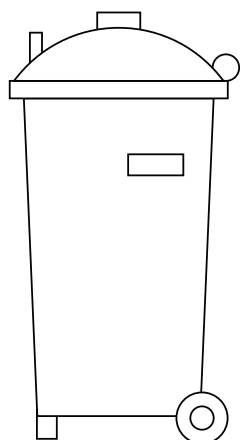
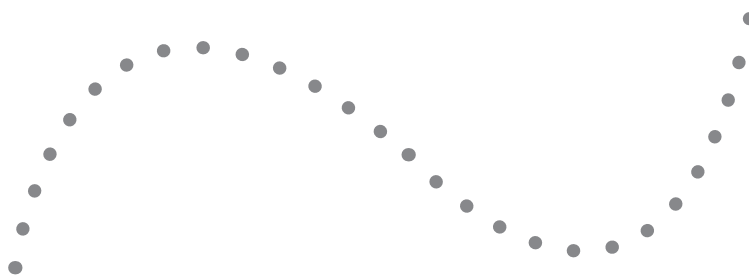
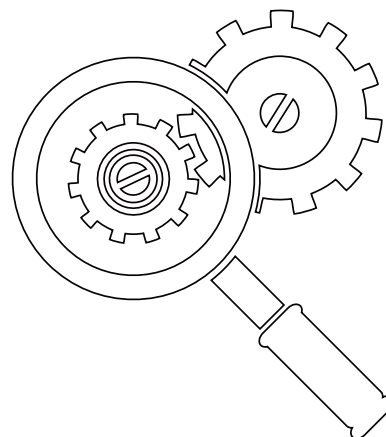
- Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.
- This manual only describes the usage of the outdoor unit. When using the indoor unit, refer to the user's manual of the indoor unit.

# Table of Contents

1	Safety Precautions .....	04
2	Unit Parts and Major Functions .....	05
3	Manual Operation and Maintenance .....	09



4	Troubleshooting .....	10
	a. Common Problems .....	10
	b. Troubleshooting Tips .....	11



# Safety Precautions

1

Thank you for purchasing this air conditioner. This manual will provide information on how to operate, maintain, and troubleshoot your air conditioner. Following the instructions will ensure the proper function and extended lifespan of your unit.

Please pay attention to the following signs:



WARNING

Failure to observe a warning may result in death. The appliance must be installed in accordance with national regulations.



CAUTION

Failure to observe a caution may result in injury or equipment damage.



## WARNING

- Ask an authorized dealer to install this air conditioner. Inappropriate installation may cause water leakage, electric shock, or fire.
- The warranty will be voided if the unit is not installed by professionals.
- If an abnormal situation arises (such as a burning smell), turn off the power supply and call your dealer for instructions to avoid electric shock, fire, or injury.
- DO NOT let the indoor unit or the remote control get wet. This may cause electric shock or fire.
- DO NOT insert fingers, rods, or other objects into the air inlet or outlet. This may cause injury, since the fan may be rotating at high speeds.
- DO NOT use a flammable spray such as hair spray, lacquer, or paint near the unit. This may cause fire or combustion.



## CAUTION

- DO NOT touch the air outlet while the swing flap is in motion. Fingers may get caught or the unit may break down.
- DO NOT inspect the unit by yourself. Ask an authorized dealer to perform the inspection.
- To prevent product deterioration, do not use the air conditioner for preservation purposes (storage of food, plants, animals, works of art, etc.).
- DO NOT touch the evaporator coils inside the indoor unit. The evaporator coils are sharp and may cause injury.

- DO NOT operate the air conditioner with wet hands. This may cause electric shock.
- DO NOT place items that might be affected by moisture damage under the indoor unit. Condensation can occur at a relative humidity of 80%.
- DO NOT expose heat-producing appliances to cold air or place them under the indoor unit. This may cause incomplete combustion or deformation of the unit due to the heat.
- After long periods of usage, check the indoor unit to see if anything is damaged. If the indoor unit is damaged, it may fall and cause injury.
- If the air conditioner is used together with other heating devices, thoroughly ventilate the room to avoid oxygen deficiency.
- DO NOT climb onto or place objects on top of the outdoor unit.
- DO NOT operate the air conditioner when using fumigant insecticides. The chemicals may become layered with the unit and endanger those who are hypersensitive to chemicals.
- DO NOT let children play with the air conditioner.
- The air conditioner can be used by children aged 8 years and older and people with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, if they have been instructed about how to properly and safely operate the system.
- DO NOT operate the air conditioner in a wet room (e.g. bathroom or laundry room). This can cause electrical shock and cause the product to deteriorate.

# Unit Parts and Major Functions

2

Unit Parts  
and Major  
Functions

## Unit Parts

### Wall-mounted type

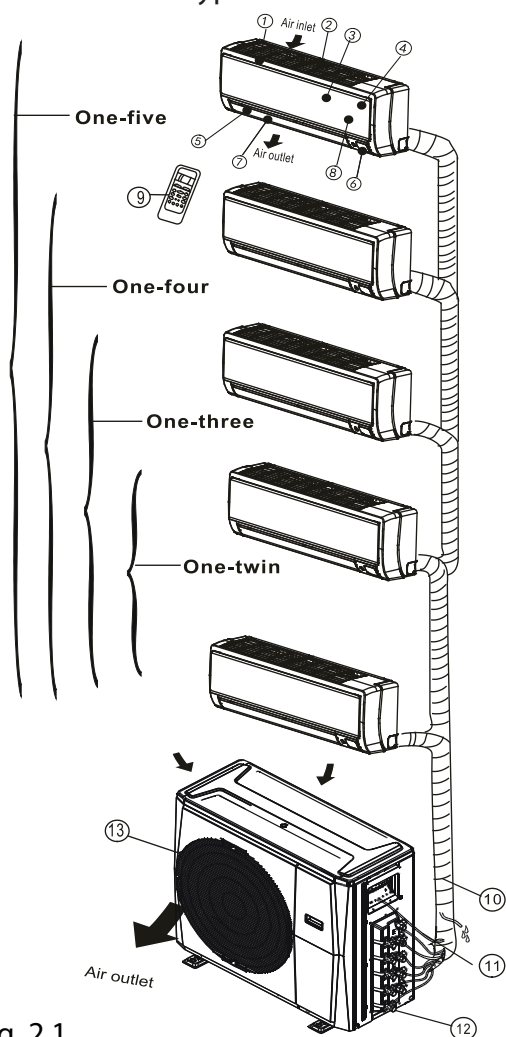


Fig. 2.1

#### Indoor unit

1. Panel frame
2. Rear air intake grille
3. Front panel
4. Air purifying filter & air filter (behind)
5. Horizontal louver
6. LCD display window
7. Vertical louver
8. Manual control button (behind)
9. Remote control holder

#### Outdoor unit

10. Drain hose, refrigerant connecting pipe
11. Connective cable
12. Stop valve
13. Fan hood

### Duct/ceiling type

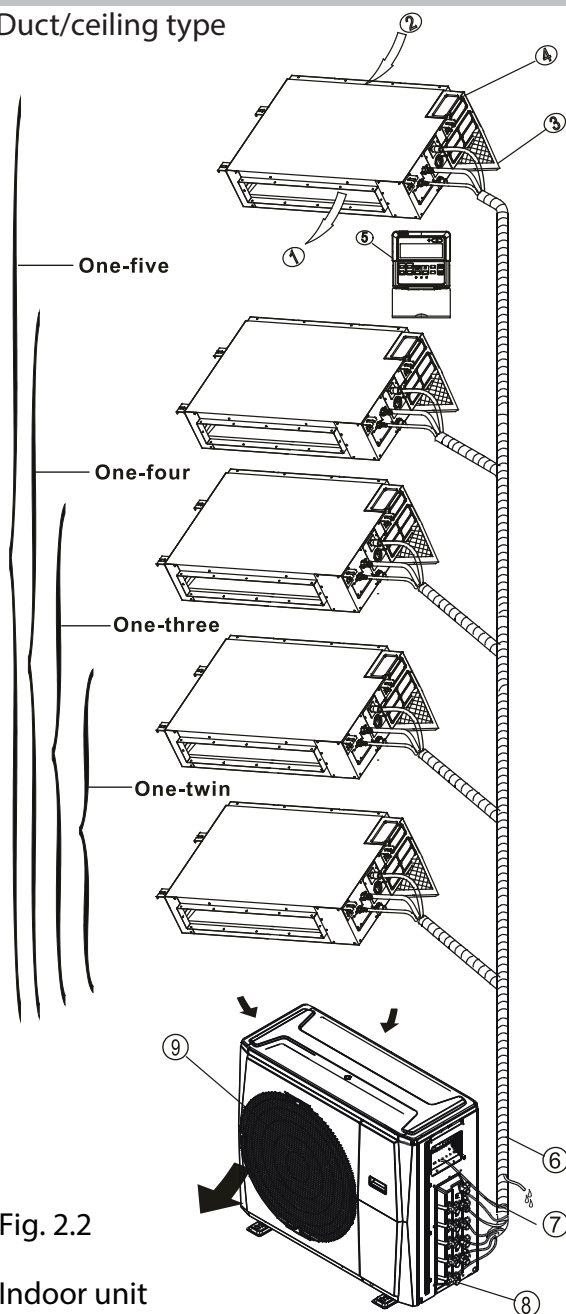


Fig. 2.2

#### Indoor unit

1. Air outlet
2. Air inlet
3. Air filter
4. Electric control cabinet
5. Wire control

#### Outdoor unit

6. Drain hose, refrigerant connecting pipe
7. Connective cable
8. Stop valve
9. Fan hood

## Floor and standing type (console)

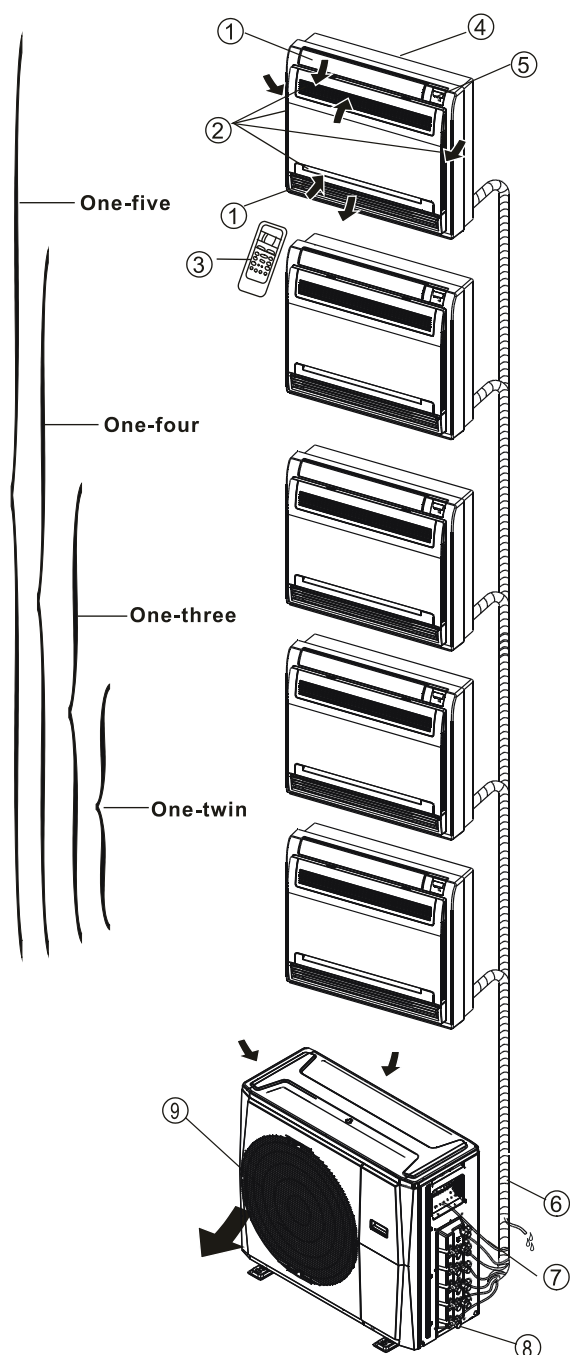


Fig. 2.3

### Indoor unit

1. Airflow louver (at air outlet)
2. Air inlet, (containing air filter)
3. Remote control
4. Installation part
5. Display panel

### Outdoor unit

6. Drain hose, refrigerant connecting pipe
7. Connective cable
8. Stop valve
9. Fan hood

## Compact four-way cassette type

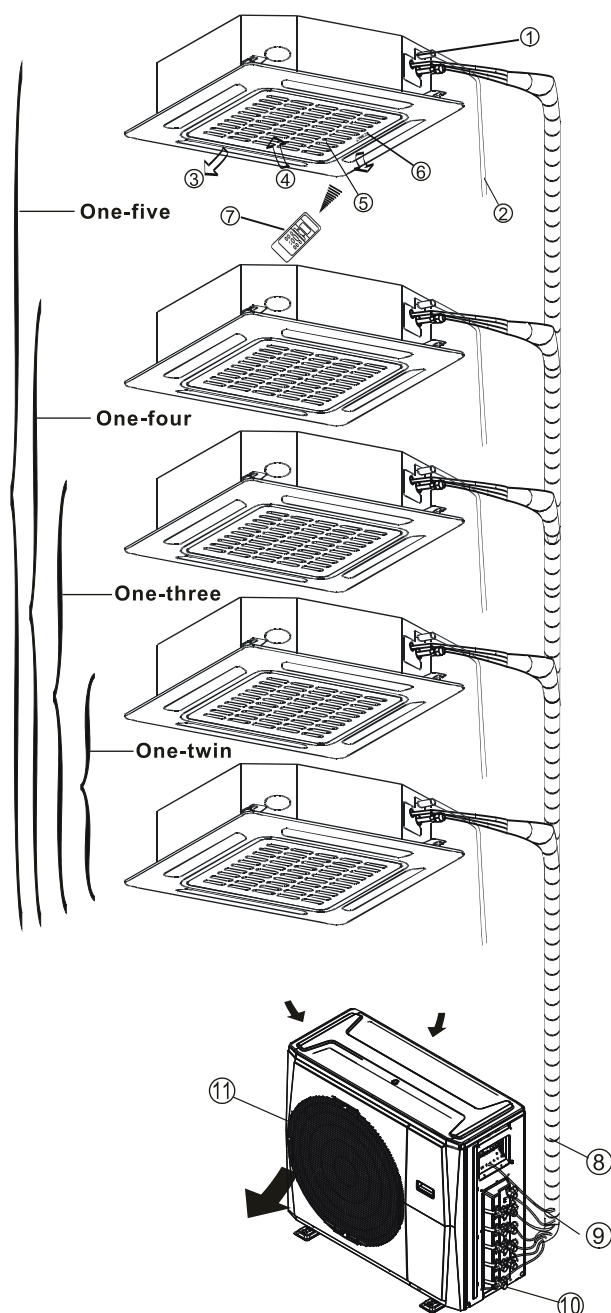


Fig. 2.4

### Indoor unit

1. Drain pump (drain water from indoor unit)
2. Drain hose
3. Air outlet
4. Air inlet
5. Air-in grill
6. Display panel
7. Remote control

### Outdoor unit

8. Drain hose, refrigerant connecting pipe
9. Connective cable
10. Stop valve
11. Fan hood

NOTE: For multi-split type air conditioners, one outdoor unit can be matched to different types of indoor units. All of the pictures in this manual are for demonstration purposes only. Your air conditioner may be slightly different, if similar in shape. The following pages introduce several kinds of indoor units that can be matched with the outdoor units.

## Operating Conditions

Use the system under the following temperatures for safe and effective operation. If the air conditioner is used under different conditions, it may malfunction or become less efficient.

	COOL Mode	HEAT mode	DRY mode
Indoor Temperature	62-90° F (17-32° C)	32-86° F (0-30° C)	62-90° F (17-32° C)
Outdoor Temperature	32-122° F (0-50° C)	5-76° F (-15-24° C)	32-122° F (0-50° C)
	5-122° F (-15-50° C) (low temperature cooling models)		

## Features

### Protection of the air conditioner

#### Compressor protection

- The compressor cannot restart for 3 minutes after it stops.

#### Anti-cold air (cooling and heating models only)

- The unit is designed not to blow cold air on HEAT mode, when the set temperature has not been reached and the indoor heat exchanger is in one of the following three situations:
  - A) Heating has just started
  - B) The unit is defrosting
  - C) The unit is heated at a low temperature
- The indoor or outdoor fan stops running when defrosting (cooling and heating models only).
- Frost may be generated on the outdoor unit during a heat cycle when the outdoor temperature is low and the humidity is high, resulting in lower heating efficiency in the air conditioner.
- Under these conditions, the air conditioner will stop heating operations and start defrosting automatically.
- The time to defrost may vary from 4 to 10 minutes, depending on the outdoor temperature and the amount of frost buildup on the outdoor unit.

#### Auto-restart (some models)

In case of power failure, the system will immediately stop. When power returns, the operation light on the indoor unit will flash. To restart the unit, press the ON/OFF button on the remote control. If the system has an auto-restart function, the unit will restart with the same settings.

#### White mist emerging from the indoor unit

- A white mist may be generated due to a large temperature difference between air inlet and air outlet in COOL mode in places with high relative humidity.
- A white mist may be generated due to moisture created in the defrosting process when the air conditioner restarts in HEAT mode after defrosting.

#### Noise coming from the air conditioner

- You may hear a low hissing sound when the compressor is running or has just stopped running. This is the sound of the refrigerant flowing or coming to a stop.
- You may also hear a low "squeaking" sound when the compressor is running or has just stopped running. This is caused by heat expansion and cold contraction of the plastic parts in the unit when the temperature is changing.
- A noise may be heard due to the louver restoring itself to its original position when power is first turned on.

#### Dust blowing out from the indoor unit.

This happens when the air conditioner has not been used for a long time or during its first use.

#### Smell coming from the indoor unit.

The indoor unit gives off smells drawn from building materials, furniture, or smoke.



The air conditioner turns to FAN ONLY mode from COOL or HEAT (for cooling and heating models only) mode.

When the indoor temperature reaches the set temperature, the compressor will stop automatically and the air conditioner will turn to FAN ONLY mode. The compressor will start again when the indoor temperature rises in COOL mode or falls in HEAT mode to the set point.

Droplets of water may form on the surface of the indoor unit when cooling occurs in relatively high humidity (defined as higher than 80%). Adjust the horizontal louver to the maximum air outlet position and select HIGH fan speed.

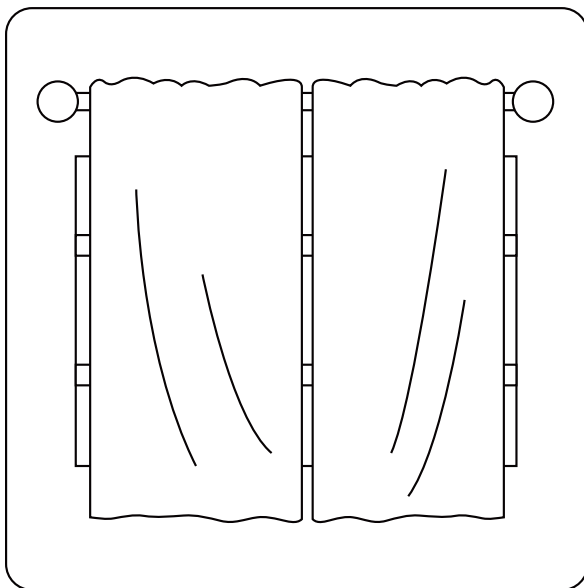
Heating mode (for cooling and heating models only)

The air conditioner draws in heat from the outdoor unit and releases it via the indoor unit during heating. When the outdoor temperature falls, heat drawn in by the air conditioner decreases accordingly. At the same time, heat loading of the air conditioner increases due to the larger difference between the indoor and outdoor temperatures. If a comfortable temperature cannot be achieved by the air conditioner alone, it is recommended that you use a supplementary heating device.

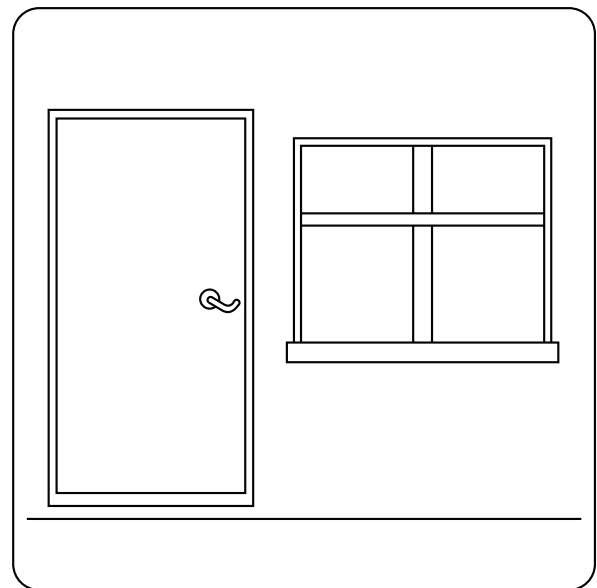
Lightning or a car wireless telephone operating nearby may cause the unit to malfunction. Disconnect the unit from its power source and then reconnect the unit with the power source. Push the ON/OFF button on the remote control to restart operation.

### Energy-Saving Tips

- DO NOT set the unit to excessive temperature levels.
- When the unit is cooling, close curtains to avoid exposure to direct sunlight.
- Keep doors and windows closed to keep cool or warm air in the room.
- DO NOT place objects near the unit's air inlet or outlet.
- Set a timer and use the built-in SLEEP/ECONOMY mode if applicable.
- If you don't plan to use the unit for a long time, remove the batteries from the remote control.
- Clean the air filter every two weeks.
- Adjust louvers properly and avoid direct airflow.



Closing curtains during heating helps keep the heat in.



Doors and windows should be kept closed.



## Operation Mode Selection

When two or more indoor units are operating simultaneously, make sure the modes do not conflict with each other. HEAT mode claims precedence over all other modes. If the unit initially operated in HEAT mode, the other units can operate in HEAT mode only. For example: If the unit initially operated in COOL (or FAN) mode, the other units can operate under any mode except HEAT. If one of the units selects HEAT mode, the other operating units will stop operation and display "---" (for units with a display window) or the auto and operation indication light will flash rapidly, the defrost indication light will turn off, and the timer indication light will remain on (for units without a display window). Alternatively, the defrost and alarm indication light (if applicable) will light up, or the operation indication light will flash rapidly, and the timer indication light will turn off (for the floor and standing types).

## Maintenance

If you plan to leave the unit idle for a long time, perform the following tasks:

1. Clean the indoor unit and the air filter.
2. Select FAN ONLY mode and let the indoor fan run for a time to dry the inside of the unit.
3. Disconnect the power supply and remove the battery from the remote control.
4. Check the components of the outdoor unit periodically. Contact a local dealer or a customer service center if the unit requires servicing.

**NOTE:** Before you clean the air conditioner, be sure to switch off the unit and disconnect the power supply plug.

## Optimal Operation

To achieve optimal performance, please note the following:

- Adjust the direction of the airflow so that it does not blow directly on people.
- Adjust the temperature to achieve the highest possible level of comfort. Do not adjust the unit to excessive temperature levels.
- Close doors and windows in COOL mode or HEAT mode.
- Use the TIMER ON button on the remote control to select a time for the air conditioner to start.
- Do not place any object near the air inlet or outlet, as the efficiency of the air conditioner may be reduced and it may stop running.
- Clean the air filter periodically. Otherwise, cooling or heating performance may be reduced.
- Do not operate the unit with the horizontal louver in the closed position.

### Suggestion:

For units that feature an electric heater, when the outside ambient temperature is below 32° F (0° C), it is strongly recommended that you keep the machine plugged in to guarantee smooth operation.

### When the air conditioner is to be used again:

- Use a dry cloth to wipe off the dust accumulated on the rear air intake grille to avoid the dispersion of the dust from the indoor unit.
- Check that the wiring is not broken off or disconnected.
- Check that the air filter is installed.
- Check if the air outlet or inlet is blocked after the air conditioner has not been used for a long time.

## ! CAUTION

If one of the following conditions occurs, switch off the power supply immediately and contact your dealer for further assistance.

- The operation light continues to flash rapidly after the unit has been restarted
- The remote control buttons do not work
- The unit continually trips fuses or circuit breakers
- A foreign object or water enters the air conditioner
- Other abnormal situations

## Common Problems

The following symptoms are not malfunctions and in most situations will not require repairs:

Problem	Possible Causes
The unit does not turn on when the ON/OFF button is pressed	The unit has a 3-minute protection feature that prevents it from overloading. The unit cannot be restarted within 3 minutes of being turned off.
	Cooling and heating models: If the operation light and PRE-DEF (Pre-heating/defrost) indicators are lit up, the outdoor temperature is too cold and the unit's anti-cold wind is activated to defrost the unit.
	In cooling-only models: If the "fan only" indicator is lit up, the outdoor temperature is too cold and the unit's anti-freeze protection is activated to defrost the unit.
The unit changes from COOL mode to FAN mode	The unit changes its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will resume operating when the temperature fluctuates again.
The indoor unit emits a white mist	In humid regions, a large temperature difference between the room's air and the conditioned air can cause a white mist.
Both the indoor and outdoor units emit a white mist	When the unit restarts in HEAT mode after defrosting, a white mist may be emitted due to moisture generated from the defrosting process.
The indoor unit makes noises	A squeaking sound is heard when the system is OFF or in COOL mode. The noise is also heard when the drain pump (optional) is in operation.
	A squeaking sound may occur after the unit is run in HEAT mode due to expansion and contraction of the unit's plastic parts.
Both the indoor and outdoor units make noises	A low hissing sound may occur during operation. This is normal and is caused by refrigerant gas flowing through both the indoor and outdoor units.
	A low hissing sound may be heard when the system starts, has just stopped running, or is defrosting. This noise is normal and is caused by the refrigerant gas stopping or changing direction.
The outdoor unit makes noises	The unit will make different sounds based on its current operating mode.

Problem	Possible Causes
Dust is emitted from the indoor or outdoor unit	The unit may accumulate dust during extended periods of non-use. The dust will be emitted when the unit is turned on. To mitigate this, cover the unit during long periods of inactivity.
The unit emits a bad odor	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) that will be emitted during operation.
	The unit's filters may have become moldy and should be cleaned.
The fan of the outdoor unit does not operate	During operation, the fan speed is controlled to optimize product operation.

### Troubleshooting Tips

When troubles occur, please check the following points before contacting a repair company.

Problem	Possible Causes	Solution
The unit is not working	Power failure	Wait for the power to be restored.
	The power switch is off	Turn on the switch.
	The fuse is burned out	Replace the fuse.
	The remote control batteries are dead	Replace the remote control batteries.
	The unit's 3-minute protection has been activated	Wait 3 minutes after restarting the unit.
Poor cooling performance	The temperature setting may be higher than the ambient room temperature	Lower the temperature setting.
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger.
	The air filter is dirty	Remove the filter and clean it according to the instructions.
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction, and turn it back on.
	Doors and windows are open	Make sure that all doors and windows are closed while the unit is operating.
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine.
	Refrigerant is low due to a leak or long-term use	Check for leaks, re-seal if necessary, and top off refrigerant.
The unit starts and stops frequently	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant.
	There is air, incompressible gas, or a foreign material in the refrigeration system	Evacuate the system and recharge it with refrigerant.
	The system circuit is blocked	Determine which circuit is blocked and replace the malfunctioning piece of equipment.
	The compressor is broken	Replace the compressor.
	The voltage is too high or too low	Install a manostat to regulate the voltage.
Poor heating performance	The outdoor temperature is lower than 44.5° F (7° C)	Check for leaks and recharge the system with refrigerant.
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use.
	Refrigerant is low due to a leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant.

## SYSTEM OPERATION

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### COOLING OPERATION

**How it works:**

In cooling mode, your indoor unit will absorb heat from the room, then the outdoor unit will discharge the heat to the outdoors. The cooling capacity decreases as the outdoor temperature increases. This causes the unit to work harder and longer to hold the selected room temperature.

**Indoor Coil Freeze Protection:**

Frost may form on the indoor coil during cooling operation when the outdoor temperature is below 50° F (10° C). Prolonged operation may cause ice to form on the indoor coil and block airflow. If the indoor unit microcomputer detects ice on the indoor coil, it will stop the compressor to defrost the coil and protect the unit.

### HEATING OPERATION

**How it works:**

In heating mode, your outdoor unit will absorb heat from the outdoor ambient, then the indoor unit will discharge the heat to the room. The heating capacity will decrease as the outdoor temperature decreases.

During extremely cold outdoor temperatures, you may need an additional heating source to supplement the heating output.

**Defrost Function:**

In heating mode, frost may form on the outdoor coil during humid and low outdoor temperature conditions. Prolonging operation may cause ice to form on the outdoor coil and block airflow. This will reduce the unit's heating capacity.

If the microcomputer detects ice on the outdoor coil, it will switch automatically to defrost mode to melt the ice and clear the coil. During defrost mode, heating will be discontinued and the indoor unit will flash the defrost indicator. The compressor will continue to run, but the indoor and outdoor fans will stop. It is normal to see steam or vapor coming from the outdoor unit in defrost mode. Defrost mode will terminate 12 minutes after the initiation of the defrost cycle or when the outdoor coil temperature is 50° F (10° C) or greater.

# ENERGY-SAVING TIPS

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- 1. Relaxing room temperature at night is OK:** During the nighttime hours, you don't require the same level of conscious cooling or heating. Try using Sleep Mode to gradually relax the room temperature and allow the unit to run less and save energy.
- 2. Curtains and shades:** In the summer, you need to block the effects of the sun. Close window curtains and shades on the south and west sides of your home to help block solar heat. In winter, the sun is your friend. Open curtains and shades to allow solar heat into your room.
- 3. Close doors:** If you don't need to heat and cool your entire home, confine the heating and cooling to one room by closing doors. Limit the space you're heating and cooling to the specified capability of the unit.
- 4. Service the unit:** You may need only some basic maintenance. The outdoor unit will greatly benefit from a good hosing out, especially in treed areas where seeds and other debris can stick to coil fins and make the unit work up to 15% harder.
- 5. Rearrange the room:** If furniture obstructs airflow, you could be heating and cooling the back of a chair or the front of a sofa instead of actual living space. Use the swing louvers to help point the air in the right direction for the room. Remove or rearrange obstacles that block airflow.
- 6. Lighting:** Turning lights off can help reduce heat. Each light bulb is a tiny heater. Your air conditioner wastes energy overcoming the heat from your lights to reach and hold your desired room temperature.
- 7. Is anyone home?** If possible, while you're away, turn your unit to Auto mode and make sure windows and drapes are closed. Although the room temperature will be uncomfortable for a few minutes when you come home, the unit will bring the room back to your desired temperature in no time.
- 8. Don't forget the fan:** The fan is much like a car: the faster it runs, the more energy it uses. Sometimes we need the car to go fast, but slow is good enough most of the time. Try saving money by using the comfortable and quiet low fan speed as much as possible.



## **LIMITED WARRANTY STATEMENT**

### **MULTI ZONE INVERTER AIR CONDITIONING SYSTEM WITH HEAT PUMP**

**This warranty should be registered on our web-site [www.cooperandhunter.us](http://www.cooperandhunter.us)**  
**The warranty is only valid when installed by a Licensed HVAC Technician**

**FOR WARRANTY SERVICE OR REPAIR:**

Contact your installing contractor. You may find the installer's name on the equipment or in your Owner's packet.

Complete product registration below and send back by e-mail at [warranty@cooperandhunter.us](mailto:warranty@cooperandhunter.us)

**PRODUCT REGISTRATION:**

Model No.: \_\_\_\_\_

Serial No.: \_\_\_\_\_ Date of Installation: \_\_\_\_\_

Owner Name: \_\_\_\_\_

Address of Installation: \_\_\_\_\_

Installing Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No. / E-mail: \_\_\_\_\_

Place Of Purchase: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

C&H distributor (hereinafter "Company") warrants this product against failure due to defect in materials or workmanship under normal use and maintenance as follows. All warranty periods begin on the date of original installation. If the date cannot be verified, the warranty period begins one hundred twenty (120) days from date of manufacture. Damage resulting from failure to use, install or maintain the product in a manner consistent with our/manufacturer's recommendations shall render the warranty void. Cooper&Hunter, at its option, may request a report from a qualified technician prior to honoring a warranty claim. If a part fails due to defect during the applicable warranty period Company will provide a new or remanufactured part, at Company's option, to replace the failed defective part at no charge for the part. This limited warranty is subject to all provisions, conditions, limitations and exclusions listed below.

- A warranty period of Seven (7) years on compressor to the original registered end-user.
- A warranty period of Five (5) years on all parts to the original registered end user.
- A warranty period of One (1) year on the remote control provided with the original unit.
- Limited warranty applies only to systems that are properly installed by a state certified or licensed HVAC contractor, under applicable local and state law in accordance with all applicable building codes and permits; C&H installation and operation instructions and good trade practices.
- Warranty applies only to products remaining in their original installation location.
- Defective parts must be returned to the distributor through a registered servicing dealer for credit.

**LIMITATIONS OF WARRANTIES:** ALL IMPLIED WARRANTIES AND/OR CONDITIONS (INCLUDING IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE OR PURPOSE) ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. SOME STATES OR PROVINCES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY OR CONDITION LASTS, SO THE ABOVE MAY NOT APPLY TO YOU. THE EXPRESS WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON, WHATSOEVER.

**THIS WARRANTY DOES NOT COVER:**

1. Labor or other costs incurred for diagnosing, repairing, removing, installing, shipping, servicing, or handling of defective parts, replacement parts, or new units.
2. Product cleaning required prior to warranty service and repair.
3. Normal maintenance as outlined in the installation and servicing instructions or user's manual, including filter cleaning and/or replacement and lubrication.
4. Failure, damage, or repairs due to faulty installation, misapplication, abuse, improper servicing, unauthorized alteration, or improper operation.
5. Failure to start due to voltage conditions, blown fuses, open circuit breakers, or damages due to the inadequacy or interruption of electrical service.
6. Failure or damage due to floods, winds, fires, lightning, accidents, corrosive environments (rust, etc.), or other conditions beyond the control of Company.
7. Failure or damage of coils or piping due to corrosion on installations within one (1) mile of a sea coast or a corrosive body.
8. Parts not supplied or designated by Company, or damages resulting from their use.
9. Products installed outside the continental USA and Canada.
10. Electricity or fuel costs, or increases in electricity or fuel costs for any reason whatsoever, including additional or unusual use of supplemental electric heat.
11. Any cost to replace, refill, or dispose of refrigerant, including the cost of refrigerant.
12. Shipping damage or damage as a result of transporting the unit.
13. Accessories such as condensate pumps, line sets, and so forth.
14. Any special, indirect, or consequential property or commercial damage of any nature whatsoever. Some states or provinces do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state or province to province.

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The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.