

Dual Air

INSTALLATION GUIDE & OWNER'S MANUAL



IMPORTANT SAFETY INFORMATION



WARNING!

This unit for indoor use only. Read complete instructions before installation.

This guide is intended as an aid to qualified, license service technician for proper installation, adjustment and operation of this unit. Read these instructions thoroughly before attempting installation or operation.

Failure to follow these instructions may result in improper installation, adjustment, service or maintenance resulting in fire, electrical shock, property damage, personal injury or death.

This product is designed and manufactured to permit installation in accordance with National Codes and local zoning codes. It is the installer responsibility to install the unit in accordance with National Codes and/or prevailing local codes and regulations. Be aware of regulations covering refrigerants. This unit uses R-410. R-410 is not compatible with any other and the use of a replacement might damage Heat pump or a/c and void warranty.

The manufacturer's warranty does not cover any damage or defect to the heat pump or a/c caused by the attachment or use of any components, accessories or devices (other than those installed by the manufacturer) into, onto, or in conjunction with the heat pump. The manufacturer disclaims any responsibility for loss or injury resulting from unauthorized use of components, accessories or devices.

Introduction

Congratulations on the purchase of your new Dual-Air Water Source heat pump or a/c CF Series. This Dual-Air product has been engineered to a high quality standard and it has passed strong factory inspections and tests to ensure years of satisfactory service. Please familiarize yourself with your new equipment. Ask your installer to explain how system works and other questions you might have for optimum enjoyment of your indoor climate maker.

Installation Start-up & Service Instruction

The CF Water Source Series provides the utmost combination of efficiency, performance and energy savings available. Safety devices built into each unit offers the maximum protection possible when properly installed and maintained.

General Description

The CF Water Source Series single package unit consists of compressor, water to refrigerant evaporator coil, metering device, reversing valve, fan and control panel with all internal necessary protection and safety circuit.

Safety Considerations

Caution: Only trained and qualified personnel should install, repair and service or perform any other operations due to system pressure and electrical voltage and maintain warranty. Otherwise warranty may be void. Before servicing turn off electrical power to unit. Electric shock could cause personal injury or death!

Location

The heat pump should be centrally located in relation to the distribution system. The unit should be installed within the applicable area. If not, unit will be exposed to severe freeze damage that warranty will not cover. Electrical controls are located on the opposite side of the condenser. Water and electrical are connected on the front of the unit. A minimum of 24" clearance in front and back of the unit is preferred.

To avoid undesirable noise when unit is installed in a crawl space, short floor joists should support it. A drain pan is recommended where water released during start-up or maintenance could cause damage to floors.

Installation

1. Before unpacking, check carton or crate for damage. Unpack the heat pump taking special care not to damage the unit. Check cabinet.
2. Inspect the equipment's internal components. All compressor-sized heat pumps are pre-charge with refrigerant. **Caution:** Do not add gas.
3. Connect water supply and return lines to water inlet and outlet. Connect drain. Flexible hose may be used for waterline to reduce vibration and improve unit serviceability. Make sure hoses and or pipes are suitable for water system pressure and sized for proper flow rate.
4. **WARNING:** Risk of Electric Shock can cause injury or Death. Disconnect ALL remote electric supplies before servicing. Use copper conductors only when connecting unit to power supply. After connection, turn back power.
5. All electrical and water connections should conform to local codes.

Start-up Procedures

Before energizing the unit, check the following:

1. Voltage power supply is correct and in accordance with nameplate ratings.
2. Low voltage control circuit is the correct size.
3. Circuit protection and field wire are the appropriate size.
4. Piping system is secure.
5. Vibration pad or isolation has been provided.
6. Unit is serviceable.
7. Access panels are secured in place.
8. Thermostat is in "OFF" position.
Caution: Before using thermostat, carefully read thermostat manual included with the Dual-Air CF Series Water Source Heat Pump.

Initial Unit Start-up

1. Set thermostat to highest temperature.
2. Set thermostat switch to "COOL". Compressor should not run.
3. Reduce thermostat setting until the compressor, reversing valve and loop pump are energized. Adjust water flow utilizing pressure/temperature plugs.
4. Turn thermostat switch to "OFF". Unit should stop running and reversing valve should be energized.
5. Leave thermostat in "OFF" position for approximately five (5) minutes to allow pressure to equalize.
6. Move thermostat to lowest temperature.
7. Set thermostat switch to "HEAT".
8. Raise temperature until unit is energized.
9. Check for vibration, leaks, etc.

10. Set thermostat to desired temperature. If necessary switch system off before changing from "HEAT" to "COOL" and wait for pressure equalization.
11. Instruct owner on proper operation of thermostat and heat pump.

Troubleshooting Guide

Service calls for the homeowner.

Troubleshooting guide		
Problem	Possible cause	Solution
No cooling or heating	1. Power off	1. Make sure main switch "ON"
	2. Incorrect thermostat setting	2. Set thermostat to proper setting
	3. Open circuit breaker or blown fuses	3. Reset or replace
Insufficient cooling or heating	1. Dirty filter	1. Replace filter
	2. Indoor air blockage	2. Check supply register & return grills for blockage
Water on floor	1. Blocked condensate drain and "P" trap	1. Remove blockage
Not listed	Call service	

For Installers

1. If heat pump or a/c does not start, after shutting power check and correct:

- a. Power supply for adequate voltage
- b. Control circuit for proper connection
- c. Loose wires
- d. Run capacitor
- e. Internal compressor ground or open winding, after compressor is cool

2. Open high-pressure switch:

- a. Check water flow
- b. Check water temperature
- c. Check condenser

3. Open low-pressure switch:

- a. Check water flow
- b. Check water temperature
- c. Check for fouled condenser
- d. Check for loss of refrigerant

Note: If lockout on safety circuit occurs, check lead size heat transfer surface for adequate size. Shut power and re-energized.

4. Insufficient cooling or heating:

- a. Check placement of thermostat for drafts on inadequate location
- b. Check water flow
- c. Check refrigerant charge
- d. Check system components

Connection to Air Supply

Use adequate duct tape to connect the heat pump or a/c to the plenum. Follow local zoning codes in all installations.

Return airflow duct should be sized according to unit to avoid airflow restrictions, as per table:

Pipe & Fittings

Caution: Galvanized pipe or fittings are not recommended for use with the CF Series heat pumps due to possible galvanic corrosion. All plumbing, both supply and discharge water lines must be sized to handle water flow with a minimum pressure drop.

Pipe will sweat if low temperature water is run through the supply and discharge lines. These lines should be insulated to prevent damage from condensation.

Solenoid valves if used should be a slow closing diaphragm type. If not, water hammer may occur on unit start up and shut down. Placing the solenoid valve on the outlet side of the system helps in the mitigation of this situation.

Caution: Inadequate water flow to heat exchanger due to improper pipes, valves or pump is dangerous to heat pump and constitutes abuse that will void the warranty of compressor and/or heat exchanger.

An in-line water screen strainer is recommended where poor water quality may exist.

Ball valves with hose connections are recommended for back-flushing and chemical cleaning of the evaporator condenser.

Electrical

WARNING! Risk of Electric Shock can cause injury or death. Disconnect ALL remote electric supplies before servicing.

Field wiring must comply with local and national fire safety and electrical codes. Power to the unit must be within the operating voltage range indicated on the nameplate or on the performance data sheet. On three phase units, phase must be balanced within 6%.

Caution: Operation of unit on improper line voltage or with excessive phase imbalance will void the warranty.

Properly sized fuses or HCAR circuit breakers must be installed for branch circuit protection. See equipment-rating plate for maximum size. The unit is supplied with an opening for attaching conduits. Connect the ground lead to the ground lug (green lug) in the control box. Connect the power leads as indicated in the wiring diagram. Refer to electric diagram for electric connections and airflow balancing.

System Maintenance



Caution: Water pipes exposed to extreme low ambient temperature are subject to freezing.

A heat pump or a/c is not a household appliance. It is a self-contained system that requires professional maintenance and repair. Other than performing the simple maintenance recommended here, you, the homeowner, should not attempt to make any adjustments to your heat pump or a/c system. A qualified technician will be able to take care of any questions or problems you may have.

Filters

When the heat pump or a/c circulates and filter the air in your house, dust and dirt particles build up on the filter. Excessive accumulation can block the airflow, forcing the unit to work harder to maintain desired temperatures, thus costing more. Check filter at least once a month and change as needed with the same size filter. Filters on Dual-Air heat pump or a/c are easy to change as they slide out of side of condenser.

Water Source Application

Closed Loop and Pond Applications: require specialized design knowledge. No attempt at these installations should be made unless the dealer has received specialized training.

Cooling Tower/Boiler Application: The cooling tower and boiler water loop temperature is usually maintained between 50° F and 100° F to assure adequate cooling and heating performance.

In the cooling mode, heat is ejected from the heat pump or a/c into the source water loop. A cooling tower provides evaporative cooling to the loop water thus maintaining a constant temperature to the unit. When utilizing open cooling towers, chemical water treatment is mandatory to ensure the water is free from corrosive minerals. A secondary heat exchanger (plate form) between the source closed loop side of the heat exchanger to insure against fouling.

In the heating mode, heat is absorbed from the source water loop. A holler can be utilized to maintain the loop at the desired temperature. In a milder climate a "flooded tower" concept is often used. This concept involves adding make-up water to the cooling water sump to maintain the desired loop temperature.

TERMS OF LIMITED WARRANTY

Dual Air, Air Conditioning Corporation warrants only to the original purchaser of a Dual Air heat pump system. Dual Air will furnish a new or rebuilt part of any part in which has failed due to workmanship or material defect within a warranty.

Dual Air will provide:

1. A new or rebuilt part during the first year limited warranty for any part supplied by Dual Air which failed as a result of defect in workmanship or materials within 12 month from the date of installation.
2. A new or rebuilt refrigeration circuit part, (reversing valve, refrigerant expansion device, check valve (if installed)). Filter drier or desuperheater (if installed) during limited warranty that has been supplied by Dual Air and failed due to defect in workmanship or material within 12 month from date installation (compressors are covered for five years under the same conditions as above).

Dual Air will NOT provide:

1. UNDER NO CONDITION IS FREON OR LABOR WARRANTED.
2. Transportation costs of replacement parts to the installation site.
3. The cost of labor, refrigerant, material, or service incurred in removal of defective part or in obtaining and reinstallation of the new or rebuilt part.
4. Any item other than repair or replacement of the Dual Air heat pump system itself.

Warranty does NOT cover:

1. Air filters, fuses and refrigerants.
2. Units or parts that have been removed from the location where they were initially installed.
3. Product on which payment is in default.
4. Products which have damages to defect resulting from improper installation, wiring, electrical characteristics or maintenance or caused by misused abuse or accident, fire, flood, alteration and/or misapplication of the unit, default or delay in performance caused by war, government restrictions or restraints, strikes, material shortage beyond control Dual Air or an act of God.
5. Any portion of the system not supplied by Dual Air.
6. Products in which the model or serial number have been defaced.
7. Units, which have suffered damages resulting from water contamination, use of corrosive fluids, erosion, operation at abnormal water temperature and/or flow and unauthorized opening of refrigerant circuit.

Obtaining Warranty Performance

Warranty is valid for licensed contractors ONLY. Contact your local distributor for details. Dual Air will charge a handling fee for any parts, repair or service required. All items will be charged F.O.B factory.

****NOTE:** Certain states do not allow limitation on how long an implied warranty lasts or the limitation or exclusion of consequential or incidental damages so the foregoing may not apply.

This warranty gives you specific legal rights and may also have other right from state to state. Subject of shipping and handling of compressor. Changes in legislation of compressor may require an additional fee.

LIMITATIONS

The warranty given in lieu of all other warranties or fitness for particular purpose and merchantability shall be limited to the duration of this express warranty. Manufacturer expressly disclaims and excludes any liability for consequential or incidental damage for breach of any express or implied warranty.

Miscellaneous

- Units are equipped with female NPT fittings.
- Used Teflon tape sealer to avoid leaks.
- Do not over tighten the connections.
- Use flexible hose between unit and rigid water system to avoid possible vibration.
- Both valves should be installed in the supply and return lines for unit isolation (easier for maintenance or repairs) and unit flow balancing.

Periodic Inspections and services by your professional serviceman will help to keep your CF Series unit operating at optimum performance for years to come reducing energy expenses and chance of major repairs.

If a repair is needed, the repairman will want to know if your unit is covered by Warranty (Please see terms of warranty packed with your system.) Take a few minutes to record the following information below:

Model No. _____

Date Installed: _____

Serial No. _____

Installer Phone#: _____

Nomenclature

CF	CF Series
X	Indicates thermal expansion valve, if factory installed
VS	Variable speed fan
060	Nominal BTUs in 000's. 060 equals 60000 BTUs
A	Voltage A=230V, 1ph, C=230 V 3Ph, D=460 V 3Ph
DA	Brand = Dual Air
SS	Cabinet material Stainless Steel
N	Cupro-Nickel coil
LF	L or R = Filter side. F=Front water fittings, S=Side water fittings
4	Refrigerant. 4= R410
XXXX	Options if any

Dual Air

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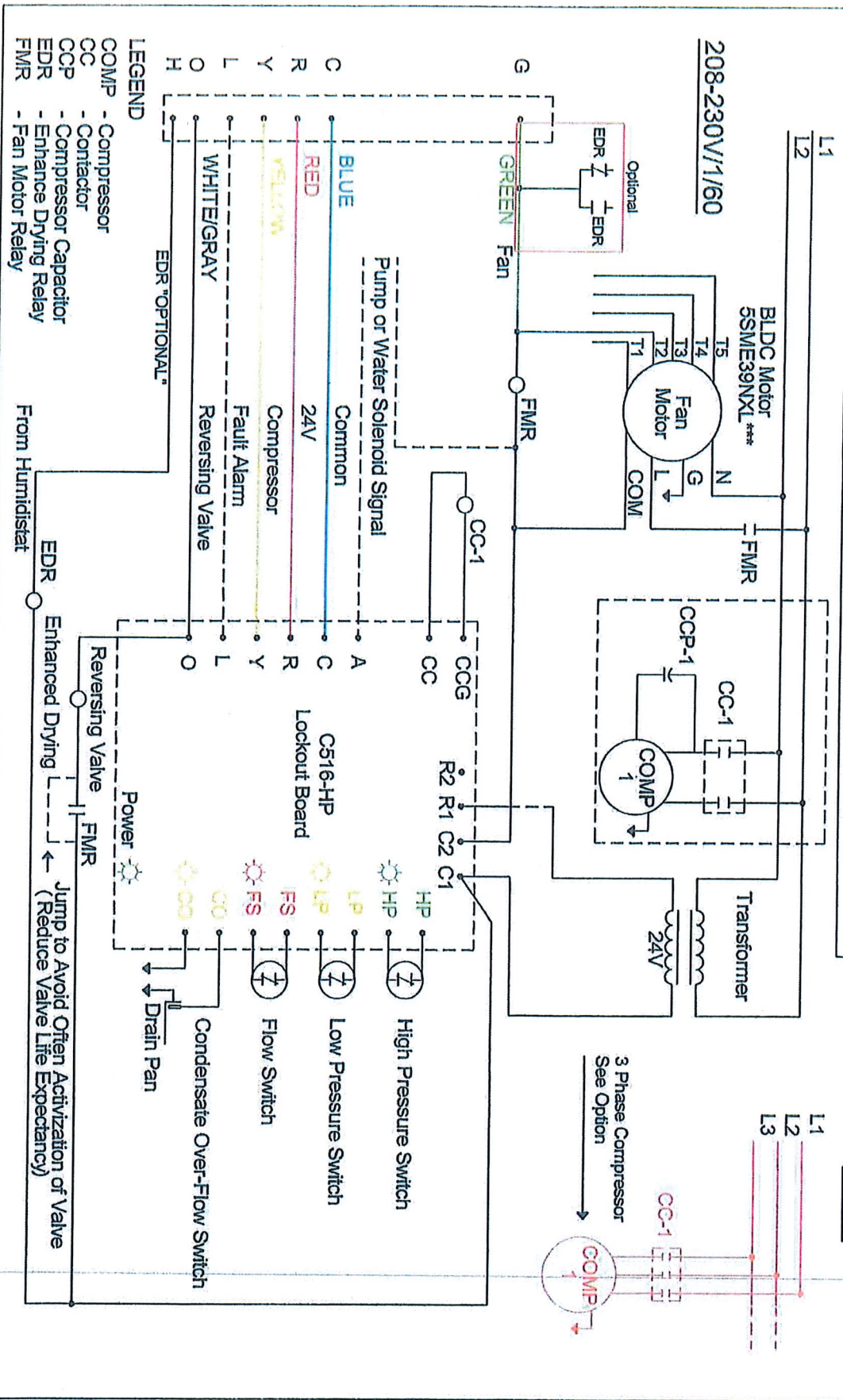
www.dualairhp.com

WATER SOURCE &

Geothermal Heat Pump

Appendix4 - X-13 Motor

1 COMP 1 CIRCUIT - SINGLE PHASE



Note: due to variations in ecm motor control controller inaccuracy, static pressure differences and job variables it is the customers responsibility to fine tune the necessary CFM and static pressure needs.