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WMWLB / WMWFM / WTWLB / WTWFM Series Hydronic Heating Unit

Installation – Operation – Maintenance

The units are designed for permanent up flow, counter flow, or horizontal left or right airflow installation. Optional DX coils are available that provide for add on DX air conditioning and heat pump applications to meet the specific requirements of the outdoor equipment.

Installation Instructions

Installation of this unit shall be made in accordance with the National Electric Code, NFPA No 90A and 90B, any other local codes or utilities requirements.

Warning:

Do not operate this unit unless all service panels / access doors are in place. If unit is located in the same area as the water heater or boiler, then the return air must be ducted to the unit. Seal all service entrances to the unit to prevent combustible byproducts from the water heater or boiler entering the air stream.

Warning:

Due to possible damage to equipment or personal injury, Installation, service and maintenance should be performed by a trained, qualified person. Consumer service is recommended only for filter replacement.

Warning:

Ensure all power is disconnected before installing or servicing this unit. More than one disconnect device may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury. Make certain all panels are in place before operating this unit.

Warning:

This unit is designed to be connected to a potable water system, therefore, the installation must comply with the applicable code of the local jurisdiction. Regardless of local code requirements, make certain that you do not use ferrous piping in connecting this unit to the water heater. The unit should be installed using new piping that is approved for potable water application.

Unpacking

Carefully unpack the unit and inspect the contents for damage. If any damage is found at the time of delivery, proper notification and claims should be made with the carrier who delivered the unit.

Check the unit rating plate to insure model number and voltage, plus any kits, agree with what you ordered. The supplier should be notified immediately of any discrepancy or parts shortage.

Location

The blower coil unit should be centrally located and may be installed in an attic, basement or crawl space with 0" clearance from any side, front, rear or duct work

The unit should not be installed where the ambient temperature can drop below 32°F, because the water in the coil could freeze and damage the coil causing damage to the structure.

If the unit is located above a finished ceiling or space, an auxiliary safety drain pan must be installed under the unit. A separate drain line must be installed from the safety pan.

The unit must be installed in a level position to insure proper condensate drainage. Make certain the unit is level in both directions within 1/8"

Caution

If the unit is located in the same room as the gas water heating appliance, then the return air must be ducted from the conditioned space to the air handler and all doors must be secured in place before operating the system. Make certain that the combustible byproducts of the water heating appliance can not enter the air stream of this system. Contact the local gas inspection department or contact the factory if you have any questions regarding this matter.

Duct Work

The duct work should be installed in accordance with the NFPA No. 90A "Installation of Air Conditioning and Ventilating systems" and No. 90B "Residential Type Warm Air Heating and Air Conditioning Installation."

The duct work should be insulated in accordance with the applicable requirements for the particular type installation as required by HUD, FHA, VA the applicable building code, local utility or other governing body.

Condensate Drain

The unit is supplied with 3/4 inch primary and auxiliary condensate drains. Both drains must be trapped outside the unit and piped in accordance with applicable building codes. Do not reduce the drain line size less the connection size on the drain pan. Condensate should be piped to an open drain or to the outside. All drains must pitch downward away from the unit a minimum of 1/8" per foot of line to ensure proper drainage.

Wiring

Consult all schematic and pictorial wiring diagrams of this unit and the outdoor equipment to determine compatibility of the wiring connections and to determine specific requirements.

All field wiring to the blower coil should be installed in accordance with the latest edition of the National Electric Code NFPA No. 70 and any local codes. Check rating plates on unit for rated volts, minimum circuit ampacity, and maximum over current protection. Supply circuit power wiring must be 75 degree C. (167 degree F) minimum, and use only copper conductors. Copper supply wires shall be sized to the National Electric Code or local code requirements, whichever is more stringent. The unit is shipped wired for 115/120 Volt AC 60 HZ 1 Phase Operation.

Be sure the unit is properly grounded.

Class 2 low voltage control wiring should not be run in conduit with power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used. Low voltage control wiring should be 18 AWG, color coded (105 degree C minimum). For lengths longer than 100ft., 16 AWG wire should be used. Make certain that separation of control wiring and power wiring has been maintained.

Air Filter

An air filter must be installed prior to the air entering the air handler and evaporator coil (if one is used) to protect the coil, blower and other internal parts from excessive dirt and dust. The door must be securely fastened in place to ensure proper filtration of the return air. A remote return air filter grille may be used for ducted return applications. Change the filter every 30 days or as soon as dust or dirt appears on the filter. Failure to change the filter in a timely fashion can result in reduced airflow, increased operating cost and may result in damage to the this unit or other portions of the heating and / or air conditioning system.

Thermostat

Select a thermostat which will meet the needs of your total installed system and is compatible with this product. This thermostat must energize the fan on a demand for heat and / or cooling.

Install the thermostat on an inside wall, away from drafts, lights or other heat sources in a location that has good air circulation from the other rooms being controlled by the thermostat. The thermostat should be mounted 4 to 5 feet above the floor.

Refer to the wiring diagram in the back of this manual for complete wiring instructions.

Blower

This unit is supplied with a multi-speed motor with a direct drive blower wheel which can obtain various air flows. The unit is shipped with the blower connected for high speed. If a lower blower speed is required, disconnect all power to the unit, remove the black indoor fan motor lead from the fan relay, place an insulated cap on the black lead, remove the insulated cap from the red indoor fan motor lead, place a spade connector on the lead and connect it to the fan relay where the black lead was originally connected. Be sure to check the air flow and the temperature rise and / or drop across the heating coil to ensure that you have sufficient air flow.

Sequence of Operation

Cooling (If applicable) When the thermostat calls for cooling, the circuit between R and G is completed, and the blower relay is energized. The N.O. contacts will close and the indoor blower will operate. The circuit between R and Y is completed: causing the contactor on the outdoor equipment to close and start the compressor and the outdoor fan motor.

Once the temperature of the air passing over the thermostat reaches the set point, the thermostat will de-energize the circuit between R and Y and cause the contactor on the outdoor unit to de-energize. At the same time the circuit between R and G is interrupted and the indoor fan will stop.

Heating When the thermostat calls for heat, the circuit between R and W is completed, the pump relay is energized and causes the circulation pump to start. Hot water is circulated through the hydronic coil. The fan relay is energized when the EWT (entering water thermostat) closes allowing the indoor fan to start. This forces the air from the structure through the hydronic coil and heat is rejected from the water coil to air which is then distributed through the duct work of the structure. When the thermostat is satisfied, the pump relay and the fan relay will be de-energized and the pump and fan will be shut off.

Water Piping

This unit requires hot water that is supplied from an external source. Piping is required to connect the water source and this air handling unit. This piping must be installed in accordance with prevailing building, safety and N.E.C. codes and requirements.

1. Material: It is recommended that all piping between the water heater and the hot water coil be 3/4" nominal (7/8 OD) copper or "polybutylene". Other material approved for potable hot water systems may also be used if approved by local code authorities. Use only brass or copper fittings on joints.....NEVER USE plastic fittings.

2. Solder Connections: ALL copper joints in the water lines must be made with low temperature, non-lead solder.

3. Insulation: It is recommended that all piping be adequately insulated to prevent freezing and a "Low Limit Control: (See "Options") be installed on the hot water coil to prevent freezing when piping is run in a space subject to freezing conditions.

4. Length: Piping should not exceed 140 total feet in length

5. Shut-off Valves: In addition to the main cold water valve supplying the water heater, it is recommended that one shut-off valve be installed on the hot water supply line to the air handler and one on the return line from the air handler (or hot water coil). These valves will facilitate air purging during start-up and allow unit isolation for repair.

6. Piping connections: The water inlet or "supply" connection to the hot water coil is marked accordingly. Air handlers with internally installed circulating pumps (optional) will not heat if piped in reverse. Water lines to and from the air handler must be connected to the horizontal connection of the "T" fittings in the vertical hot and cold water supply lines at the water heater. This insures that any air in the water heater will bypass the heating loop and then be purged each time hot water is used in the dwelling. If this piping procedure is not followed, the pump may "air lock" and fail to pump hot water. If it is necessary to "T" off from a horizontal hot water line, we recommend coming off the bottom of the horizontal line to feed the air handler or hot water coil. Any other piping procedure must address the elimination of air in the heating loop. Contact the factory for assistance with alternate piping procedures.

Air handler: Holes should not be drilled into the air handler or coil cabinets (except through duct flanges) since damage to the coils could result.

This system may be used in conjunction with potable water or closed loop systems. It is strongly recommended that a licensed contractor be employed to install the required water piping.

Use only new materials when installing this unit. Suitable types of material are copper and polybutylene which are rated for hot water of the temperature you are utilizing. Other materials may also be used if approved by local code authorities.

Use only brass or copper fittings on joints. All soldering joints must be made using only low temperature non lead solder.

Total piping should not exceed 140 feet. Piping must be insulated to prevent heat loss and to protect from freezing temperatures. The optional "Low limit control" is recommended if the air handler is located where it might be subject to freezing temperatures.

START UP (Cooling Mode)

Once all connections are completed, the unit should be started up and a check out of the completed system should be performed. Before performing any system test make sure that all grilles, register and dampers are open and set to the correct position. Also make certain that an air filter is installed in the return air prior to the Air Handler.

A performance test should be completed in accordance with the outdoor equipment manufacturer's instructions. Airflow tests should be conducted in the heating and cooling modes to ensure satisfactory operation.

START UP (Heating cycle)

1. Open the main shut - off valve to and from the air handler or hot water coil.
2. Fill system with water, making sure to purge any and all air from the system.
3. Turn on the heating source.

4. Purge the air handler hot water coil and lines. Once the air is completely removed upon start - up, the circulating pump will circulate the required amount of hot water through the heating loop providing the pipe has been properly sized.
6. Switch the room thermostat to "heat" and set it high enough to energize the fan motor and pump.
7. Adjust the water temperature to meet you needs. An indoor / outdoor step-controller is strongly recommended.

IMPORTANT: For system to operate properly power should be turned ON and all shut - off valves should be OPEN.

Sequence of Operation

Cooling When the thermostat calls for cooling, the circuit between R and G is completed, and the blower relay is energized. The N.O. contacts will close and the indoor blower will operate. The circuit between R and Y is completed: causing the contactor on the outdoor equipment to close and start the compressor and the outdoor fan motor.

Once the temperature of the air passing over the thermostat reaches the set point, the thermostat will de-energize the circuit between R and Y and cause the contactor on the outdoor unit to de-energize. At the same time the circuit between R and G is interrupted and the indoor fan will stop.

Heating When the thermostat calls for heat, the circuit between R and W is completed, the pump relay is energized and causes the circulation pump to start. Hot water is circulated through the hydronic coil. The fan relay is energized and the indoor fan comes on. This forces the air from the structure through the hydronic coil and heat is rejected from the water coil to air which is then distributed through the duct work of the structure. When the thermostat is satisfied, the pump relay and the fan relay will be de-energized and the pump and fan will be shut off.

Maintenance

The system air filter(s) should be inspected, cleaned or replaced at least monthly. If the filter is mounted internal to unit, make sure that electrical power is disconnected before removing the access panels. Make certain that the access panels are replaced and secured properly before placing the unit back in operation. This product is designed for dependable service; however, periodic maintenance should be scheduled to be conducted by trained professional service personnel. This service should be conducted at least annually, and should include testing and inspection of electrical and refrigerant components. The heat transfer surface should be cleaned. The blower motor is permanently lubricated for normal operating conditions.

Warnings

Do not store or use any corrosives or combustibles in the vicinity of this unit. All panels must be in place and properly secured before operating this equipment.

All electrical power servicing this unit must be disconnected prior to removal of any panels. Service of this unit must be accomplished by qualified trained professional personnel only

Conforms to UL STD 1995

THIS UNIT IS MANUFACTURED IN THE USA



The manufacturer makes the following limited warranty for products manufactured for residential applications and installed in the United States and Canada. Products installed in commercial applications are provided a limited one year warranty as outlined below. These limited warranties extend to the original purchaser and any subsequent transferees as long as the product remains at the site of the original installation.

Limited One Year Warranty

Manufacturer warrants to the purchaser, that should this product prove defective within 18 months from the date of manufacture or one year from the installation date (whichever is the shorter of the two periods), due to improper workmanship and/or material and not due to improper installation, Manufacturer will repair or replace, at its option, any defective part without charge for the part. Any replacement parts provided under this limited warranty is warranted only for the remainder of the original warranty period.

This warranty does not include labor or other costs incurred for the servicing, maintenance, replacing, removing, shipping or handling of either defective or replacement parts, or complete unit, except as stated above. These costs may be covered by a separate warranty provided by the selling dealer or contractor. If the manufacturer's serial number is removed from the unit or is not available, then the warranty is null and void.

Limited Additional Second thru Fifth Year Indoor Coil and Drain Pan Warranty (Effective 8-1 98)

During the period from 19 months through 66 months from the date of manufacture, or 13 through 60 months from the date of installation (whichever is the shorter period), should the indoor coil or drain pan prove defective due to improper workmanship and/or material, Manufacturer will furnish a replacement coil or drain pan at no charge, FOB factory. The owner will be responsible for any freight, installation, or handling charges of the installing contractor and/or wholesale distributor. The replacement is warranted for the remainder of the original warranty period.

The Above Warranties are Subject to the Following Conditions:

You must retain your bill of sale or provide other proof of purchase. This limited warranty applies only while the product remains at the site of the original installation (except for mobile home installations) and only to products installed by licensed dealers or contractors as determined by local licensing requirements. This limited warranty applies only if the product is installed and operated in accordance with the manufacturer's instructions and in compliance with applicable local installation and building codes and good trade practices.

This Warranty Does Not Cover Damages Caused By: (A) Accident, negligence, or abuse; (B) operating the product in a corrosive atmosphere containing chlorine, fluorine, or any other damaging chemicals; (C) repair or service by anyone not properly qualified to perform such service (D) modification or alteration of the product; (E) improper matching or application of the product or components; (F) failure to provide proper maintenance and service to the product according to the manufacturer's instructions; (G) installation or operating the product in a manner contrary to the instructions of the manufacturer; (H) lightning, fluctuations in electrical current or other acts of Nature. This limited warranty also excludes all costs of installation, disconnection, or dismantling the product, parts used in connection with normal maintenance such as filters, and owner required maintenance. Consult the instructions enclosed with the product for information regarding recommended maintenance and service.

Coils which are diagnosed as restricted in the refrigeration circuit are warranted only for a period of 90 days from the date of installation. Refrigeration circuit restrictions caused by a manufacturing defect are evident at start up of the equipment, and for sure in the first 90 days of operation. Restrictions beyond this time period are virtually always caused by installation and charging problems and not manufacturing defects.

To obtain warranty service and/or parts replacement you must notify your selling dealer or contractor of any defect within the applicable warranty period. If you have any questions about service or parts that your selling dealer or contractor cannot answer, please contact the manufacturer.

All warranties implied by state law, including any implied warranty of merchantability and fitness for a particular purpose, are expressly limited to the duration of the limited warranty set forth above. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. With the exception of any warranty implied by state law as hereby limited, the foregoing express warranty is exclusive and in lieu of all other warranties, guarantee, agreement and similar obligations of manufacturer or seller with respect to the repair or replacement of any product or part.

In no event shall Manufacturer be liable for consequential or incidental damages. Some states do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you. No person, agent, distributor, dealer or company is authorized to change, modify or extend terms of this warranty in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of Manufacturer arising under this warranty or under any statute, or law of the United States or any states thereof, is hereby limited to one year from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law so the above provision 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.

Any controversy or claim arising out of or relating to this warranty, or the breach thereof, shall be settled through binding arbitration administered by the American Arbitration Association in accordance with its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. This is the exclusive and sole remedy of Buyer, for any breach of warranty. Pursuit of any legal remedy must occur in the state and county of the manufacturer.