

# DFCH SERIES FAN COIL UNIT

## INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

**\*\*\*\*\* WARNING TO INSTALLER, SERVICE PERSONNEL AND OWNER \*\*\*\*\***

Altering the product or replacing parts with non authorized factory parts voids all warranty or implied warranty and may result in adverse operational performance and/or a possible hazardous safety condition to service personnel and occupants. Company employees and/or contractors are not authorized to waive this warning.

### GENERAL

The manufacturer assumes no responsibility for equipment installed in violation of any code requirement.

These instructions give information relative to the installation of these fan coil units only. For other related equipment refer to the proper instructions.

Material in this shipment has been inspected at the factory and released to the transportation agency in good condition. When received, a visual inspection of all cartons should be made immediately. Any evidence of rough handling or apparent damage should be noted on the delivery receipt and the material

inspected in the presence of the carrier's representative. If damage is found, a claim should be filed against the carrier immediately.

#### FAN COIL UNIT

The installer must adhere strictly to all local and national code requirements pertaining to the installation of this equipment.

These units are designed to be mounted vertically on an inside wall or horizontally on a ceiling with zero clearance to combustible materials.

### PRE-INSTALLATION CONSIDERATIONS

- 1) Determine location for mounting the unit to insure best air circulation within the room and enabling the indoor fan coil and outdoor section to be in close proximity of each other.
- 2) Determine routing of refrigerant tubing and electrical service between both units.  
See Figure 1 and 2 for location of refrigerant tubing and electrical service entrance positions.
- 3) A condensate line will need to be routed to drain directly outdoors onto the ground or connect to an open drain trap.
- 4) Location of unit must be in an area providing adequate access to the unit since all components must be serviced from front of the unit. This location must also be capable of supporting the weight of the unit.
- 5) Outdoor section must be installed in accordance with its manufacturers installation instructions.

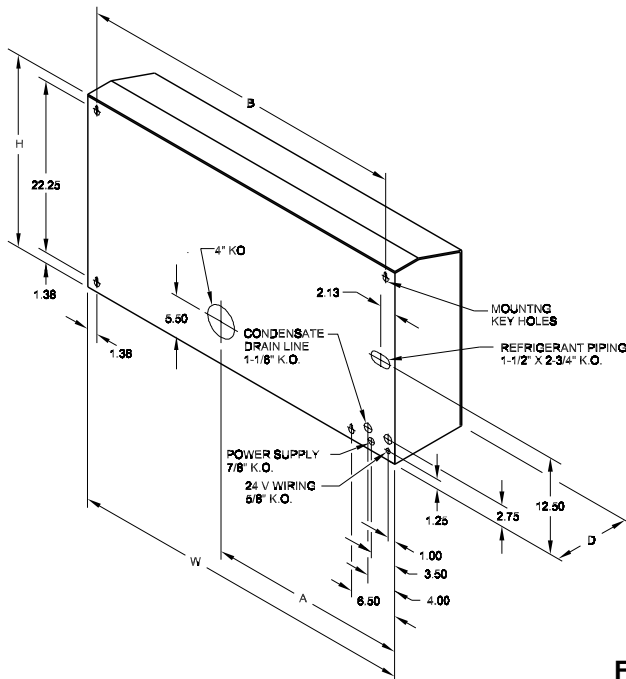


Figure 1

Unit Model	H	W	D	A	B
12/18DFC	25	34	10	19-3/4	31-1/4
24/30DFC	25	46	10	26	43-1/4

## WALL MOUNT (Vertical)

- 1) Mounting location must allow enough clearance to permit the removal of screws that secure the cabinet panels.
- 2) After selecting the location for the unit, remove the return air panel and coil access panel.
- 3) Four keyhole slots are provided in the cabinet wrapper for mounting to the wall. See figure 1 for keyhole locations.  
**Note: A template with keyhole locations has been shipped with each unit to simplify pattern location. Make sure the placement of the unit is such that the structure will support the weight of the unit.**
- 4) Refer to Figure 1 for location of refrigerant line and electrical service entry. Drill the appropriate holes as required.
- 5) Remove knockouts from unit wrapper where electrical and refrigerant service will enter. Install 5/8" snap bushing in 5/8" OD hole where 24 volt thermostat wire will be routed. See figure 1.
- 6) Refer to electrical wiring, refrigerant piping and condensate drain sections for additional information.
- 7) Mount fan coil to drywall and secure.

## FLOOR MOUNT (Vertical)

The wall unit may be floor mounted with the addition of the DFC floor base accessory. The floor base should be screwed to the bottom of the unit before unit installation. Refer to floor base installation instructions for mounting instructions.

- 1) Mounting location must allow enough clearance to permit the removal of screws that secure the cabinet panels.
- 2) After selecting the location for the unit, remove the return air panel and coil access panel.
- 3) Two keyhole slots are provided in the top corners of the cabinet wrapper to secure the unit to the wall. See figure 1 for keyhole locations.
- Note: A template with keyhole locations has been shipped with each unit to simplify pattern location.**
- 4) Refer to Figure 1 for location of refrigerant line and electrical service entry. Drill the appropriate holes as required.
- 5) Remove knockouts from unit wrapper where electrical and refrigerant service will enter. Install 5/8" snap bushing in 5/8" OD hole where 24 volt thermostat wire will be routed. See figure 1.
- 6) Refer to electrical wiring, refrigerant piping and condensate drain sections for additional information.
- 7) Locate fan coil at desired location and secure cabinet from two upper keyholes to drywall.

## CEILING MOUNT (Horizontal)

- 1) Mounting location must allow enough clearance to permit the removal of screws that secure the cabinet panels.
- 2) **Ceiling mounting structure must be sufficient enough to support the unit weight.**
- 3) After selecting the location for the unit, remove the return air panel, coil access panel and drain pan assembly.

- 4) Four keyhole slots are provided in the cabinet wrapper permitting the unit to be mounted to the ceiling. See figure 1 for keyhole locations.

**Note: A template with keyhole locations has been shipped with each unit to simplify pattern location.**

**Construction of the ceiling and method of attaching bolts must be such that it will support the weight of the unit.**

- 5) Refer to Figure 2 for location of refrigerant line and electrical service entry. Drill the appropriate holes in ceiling and framework as required.
- 6) Remove knockouts from unit wrapper where electrical and refrigerant service will enter. Install 5/8" snap bushing in 5/8" OD hole where 24 volt thermostat wire will be routed. See figure 2.
- 7) Refer to electrical wiring, refrigerant piping and condensate drain sections for additional information.
- 8) Mount fan coil to ceiling, secure and check to make sure unit is level.

**Note: Unit must be level to insure proper condensate drainage.**

**Warning: Make sure proper bolts and washers are used that will prevent disengagement through the keyholes.**

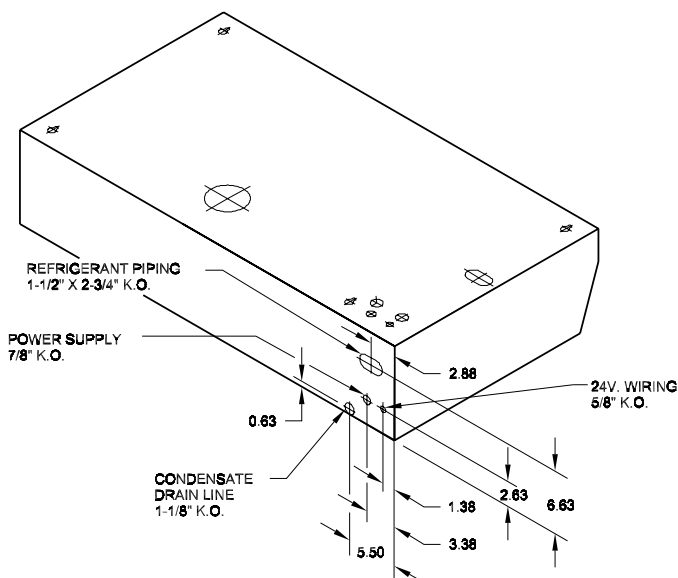


Figure 2

## ELECTRICAL

All wiring must comply with local and national code requirements. Units are provided with wiring diagrams, located on electrical compartment panel, and nameplate data to provide information required for necessary field wiring. A 7/8" AND 1-1/8" knockout is provided as entry points for field wiring. Refer to figure 1 and 2. If 1-1/8" knockout is used install snap bushing in hole and route flex conduit through snap bushing to 7/8" hole in electrical box and secure.

These units are provided with a Class 2 transformer for 24-volt control circuits. Should any add-on equipment used also have a Class 2 transformer furnished, care must be taken to prevent interconnecting outputs of the two transformers by using a thermostat with isolating contacts.

## REFRIGERANT PIPING

Entry points for the refrigerant lines are shown in Figure 1 and 2. These lines must be sized in accordance with the outdoor unit manufacturer's recommendations. The evaporator coil is factory supplied for sweat connections on the liquid and suction lines. A short preformed 90 degree copper elbow is also factory supplied to facilitate the connection to the suction line at the evaporator.

To ease the installation of the refrigerant lines to the evaporator, remove the drain pan by sliding it out of the fan coil unit.

Upon completion of refrigerant connections check all connections for leaks. In addition the suction line must be fully insulated to prevent sweating of refrigerant line within the unit. A length of Armaflex insulating tape has been shipped with the unit for this propose.

Reinstall drain pan to original position.

## REFRIGERANT CHARGING

Refer to outdoor manufacturer installation instructions for initial charging instructions. Even though the outdoor unit is factory precharged, the charge must be checked and adjusted if required.

Allow sufficient running time in the cooling cycle, 20 to 30 minutes, for system to balance. At this time you must check the sub-cooling of the liquid refrigerant at the outdoor unit to insure a proper liquid seal is present at the expansion valve.

At outdoor conditions between 80 to 95 degrees the system should be charged to a sub-cooling level of 8 to 10 degrees at the outdoor unit. This charge will permit the expansion valve to operate properly at a superheat level of 6 to 8 degrees. Superheat at the outdoor unit will be in the range of 12 to 18 degrees.

To increase sub-cooling increase refrigerant charge.

To decrease sub-cooling decrease refrigerant charge.

## CONDENSATE DRAIN LINE

Drain line installation must adhere to all code requirements.

### Wall or Floor Mount (Vertical)

Figure 1 shows the location of the condensate knockouts.

Install a rigid (copper) drain line connected to the drain pan nipple (5/8" OD). The condensate line should drain directly outdoors or connect to an open drain trap. An open drain trap is required to prevent any possible sewer gas from entering the fan coil unit through the drain tube.

It is also necessary to have adequate slope in the drain line from the fan coil unit to the open trap or outdoors to ensure proper drainage.

### Ceiling Mount (Horizontal)

Figure 2 shows the location of the condensate knockouts.

The following requirements should be met to insure proper drainage of condensate from the pan in the horizontal position:

1) Fan coil must be installed **level**.

2) Install a rigid (copper) drain line connected to the drain pan nipple (5/8" OD) and extending out the rear of the cabinet. This line must be sloping down slightly from the drain pan to the rear of the cabinet.

3) The rigid drain line should drain directly outdoors or connect to an open drain trap. An open drain trap is required to prevent any possible sewer gas from entering the fan coil unit through the drain line.

It is also necessary to have adequate slope in the drain line from the fan coil unit to the open trap or outdoors to ensure proper drainage.

**Warning: The condensate pan will overflow if drain line is higher than drain pan at any point.**

4) A condensate pump must be installed if the drain line is to be run above the drain pan elevation. The pump must be located external to the fan coil unit and lower than the drain pan in order to operate properly. (See condensate pump installation instructions.)

## THERMOSTAT WIRING

- 1) Mounting location of thermostat should be on an interior wall approximately 4-5 feet above the floor, which will not be subjected to drafts and is not in the direct path of the discharge airstream of the unit.
- 2) Make sure 5/8" snap bushing has been installed in 5/8" knockout on cabinet wrapper to protect low voltage wiring. Route thermostat wire through bushing and raceway to the low voltage junction box.
- 3) Wire low voltage circuit as indicated on unit wiring diagram. For units without electric heat option, do not connect thermostat wiring to "W" terminal at thermostat or to "W" lead (white) at low voltage junction box.

## AIR LOUVER ADJUSTMENTS

The discharge air louvers may be adjusted in one or several positions to direct airflow to one or more areas of the room.

To adjust, pull louver straight out from recessed position and rotate louver to desired direction then reinsert into recessed position.

**Note: Do not pull louver out further than required during adjustment for spring may become stretched.**

## SYSTEM START-UP

- 1) Prior to start-up, inspect the blower to assure the wheels turn freely without rubbing on the housing.
- 2) This fan coil is equipped with a 3-speed motor which gives the consumer the option of High-Med or Med-Low fan speeds. The unit is factory set at High-Med, however if installation requires a quieter application, remove blower/motor wiring plug and insert into lower socket for Med-Low speeds.  
**Note: If unit has electric heat, refer to wiring diagram on unit for proper fan speed combination.**  
**WARNING: All panels must be installed before operating unit.**
- 3) **System check** - set thermostat system switch to "Off" position and fan switch to "Auto" position. Apply power to both the indoor and outdoor units.
- 4) Set fan switch to "On", fan should operate.
- 5) Return fan switch to "Auto" position. Set system switch to "Cool" and lower thermostat set point to coldest setting. Outdoor unit should energize as well as fan coil.
- 6) Set system switch to "Heat" and raise thermostat to a set point warmer than room temperature. Outdoor unit should energize as well as fan coil. If unit has electric heat, raise thermostat to the warmest set point, within a minute the electric heat should energize.
- 7) Return system switch to off position.

## MAINTENANCE

The only maintenance required to be performed is to keep the air filter clean. Allowing dust to form on the filter will eventually cause the unit to lose efficiency. Once a month check and clean filter if required.

The filter is a permanent type and may be removed and washed with a garden hose. Filter should be completely dry before reinstalling.