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Fan Coil Unit

INSTALLATION, OPERATION & MAINTENANCE MANUAL

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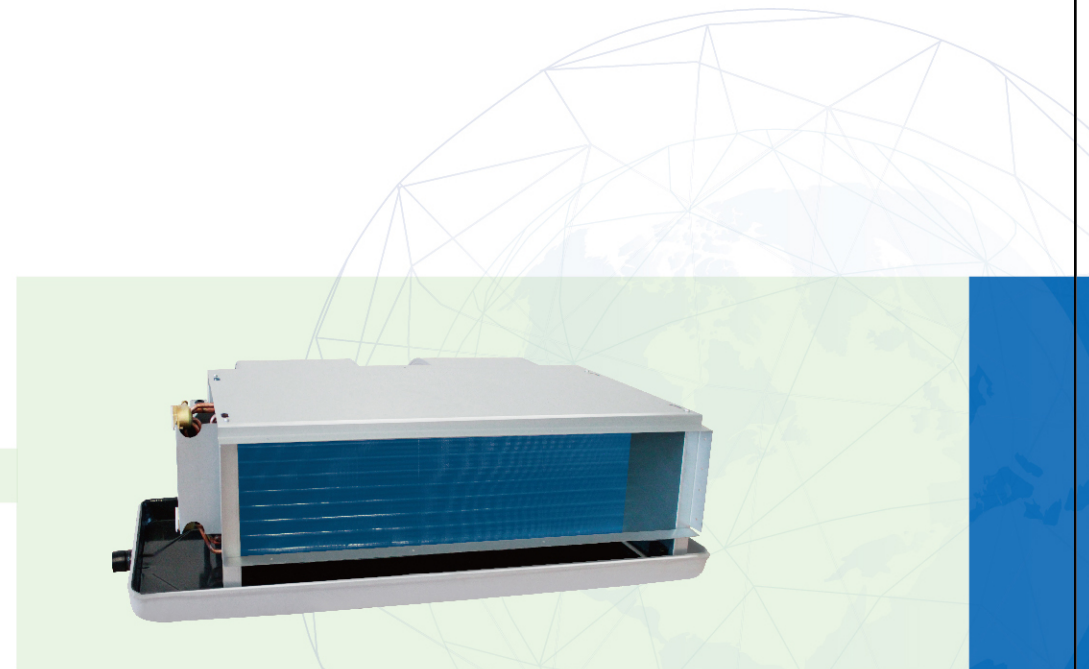
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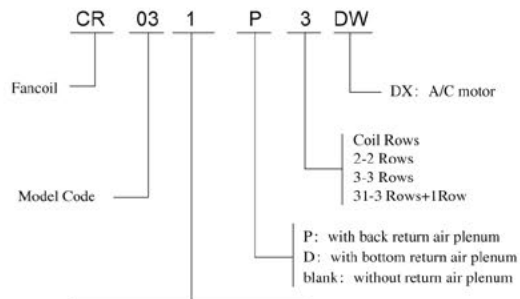
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TABLE OF CONTENTS

DESCRIPTION	PAGE NO.
INTRODUCTION	1
Unit Nomenclature	1
Preliminary Installation	1
Construction Precautions	2
Damaged Freight Claims	2
Storage	2
Unpacking And Preparation	2
INSTALLATION	3
Water Piping	3
Piping Support	3
Coil Venting	3
Valves And Control Packages	3
Electrical Controls And Connections	3
Installation Precautions	4
Installation Procedures	4
Start- Up	4
※After Installation But Prior ToStart-Up	4
※To The Installing Contractor	5
※To The Building Manager	5
OPERATION	6
Fans	6
Coil Venting	6
PREVENTIVE MAINTENANCE	6
Air Filters	6
Lubrication	7
Coils	7
Drain Pipes	7
Replacement Parts	7
WIRING DIAGRAM	8

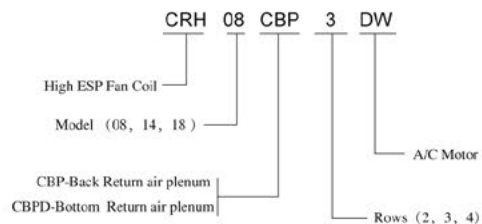
INTRODUCTION

UNIT NOMENCLATURE



※Type:

- 1--Concealed horizontal ceiling discharge. (12Pa)
- 3 --Concealed horizontal ceiling discharge.(30Pa)
- 5 -- Concealed horizontal ceiling discharge.(50Pa)
- 7 -- Concealed horizontal ceiling discharge. (70Pa)
- FB--Floor standing vertical concealed unit. (with return air plenum 0 Pa)



※Notes:

1. Left hand or Right hand piping connection is determined by discharge face.
2. Drain pan piping connection will always be on the same side with coil connection, opposite to the terminal box side.
3. Units with return air plenum can opt to pair with filters in accordance with customer's requirement

GENERAL

This service manual covers the installation, operation and maintenance of concealed type chilled water fan coil units. It should be read thoroughly before attempting to install any of the fan coil units.

PRELIMINARY INSTALLATION

Provisions must be made during the construction of the building to allow for the installation of the following items before final installation of the individual units. These are:

- i.) Water mains.

- ii.) Electrical provisions.
- iii.) Supply and return air duct.
- iv.) Ceiling anchors for units requiring studs and bolts for securing units to ceilings. It is of utmost importance (especially where anchors or studs are cemented in the ceilings) that the anchors be accurately set to the exact dimensions given on the job and product drawings to insure compatible matching of the anchors to the mounting holes of the unit. Inaccurately placed anchors or studs (as well as water piping) could result in installation delays and increased installation costs to make the necessary field corrections.

CONSTRUCTION PRECAUTIONS

During the installation of concealed units, special care must be taken to prevent plaster, insulation, paint or other foreign material from deposited on the motor or the blower wheels. All foreign materials must be removed from the drain pans and drain lines before the unit is put in operation.

DAMAGED FREIGHT CLAIMS

Concealed units are inspected and tested before leaving the factory. They are properly packed and should be in perfect condition when received at the job site.

They should, however, be inspected for damage which may have occurred during shipment. If damage is evident, it should be noted on the carrier's freight bill. A written request for inspection by the carrier's agent should be made at once.

※Note: Dunham-Bush will not be responsible for any damage or loss of parts occurring during shipment or at the job site.

STORAGE

If equipment is to be stored out-of-doors, special care must be taken to protect the units from moisture, corrosion and dust.

UNPACKING AND PREPARATION

1. Carefully remove unit from carton/ crate.
2. Check to make sure that all loose items such as switches, thermostats, auxiliary drain pans, etc. are accounted for.

※Caution: The ends of the risers that extend out of the top and bottom of the units are not to be used as handles to carry the unit.

The following installation sections covering water piping, electrical controls and connections, installation precautions apply to concealed fan coil units. Specific installation details for a particular unit may vary in appearance due to special job requirements, specified by the customer, for valve packages, coils, motors and optional accessories. However, the installation of the basic unit remains the same.

WATER PIPING

All supply, return, and drain lines installed in the building during construction must be installed according to the job drawing. Water piping must be stubbed to finished dimensions for accurate piping hook-up of the unit to the water piping.

All water lines must also be installed with sufficient clearance to allow for electrical feed lines and control lines (if used), and for applying any necessary insulation.

PIPING SUPPORT

All water mains must be adequately supported to carry the necessary weight involved, however, provisions must be made by the installing contractor to allow for adequate free movement of all vertical and horizontal risers and runouts.

COIL VENTING

The basic unit coil is equipped with a manually operated air vent/purge valve. By means of this valve, air may be purged out manually from the coil to keep it operating at full capacity.

VALVES AND CONTROL PACKAGES

The valve package is field supplied. Installation of any of the control valve kits consists mainly, of mounting the control valve, the stop valve, the thermostat; making the electrical or pneumatic connections according to the specified drawing. The valve must be installed in the correct operating position.

ELECTRICAL CONTROLS AND CONNECTIONS

All electrical connections are to be made in accordance with the National Electric Code and local codes and ordinances.

Concealed units are furnished with one or two motors and electrical terminal box. Wiring between motor and terminal box is factory wired. The control device is field supplied.

INSTALLATION PRECAUTIONS

1. Units must be installed level to assure proper drainage and operation. The unit must be mounted so that the drain water will flow towards the drain connection.
2. Be sure that foreign material is not allowed to collect in the drain pan. All foreign material must be removed from the drain pan and the drain line must be open before the unit is put into operation.
3. The valves and piping should be insulated properly especially places where the pipes are not covered by drain pan.
4. See the wiring diagram on each unit for proper voltage and control application information.
5. Units must be installed in noncombustible areas.

INSTALLATION PROCEDURES

To install the basic unit, proceed as follows:

1. Mount the basic unit to the ceiling. Use suitable metal washers, lock washers and nuts to secure unit.
2. Level the unit. When the unit is drawn up against the ceiling, it must hang level for proper water drainage. Shim the unit, if necessary, to obtain proper leveling. When properly leveled, the water will flow towards the drain connection.
3. Connect the pipe and install valve packages as required.
4. Insulate all pipes properly.
5. Make electrical connections per job drawing and applicable wiring diagrams.
6. Make duct connections. Field-supplied transition fittings must be used in installations where unit duct collars do not match grille collars.

START-UP

After Installation But Prior To Start-Up

The following procedures must be completed before any attempt is made to put the entire system into operation.

1. Piping connections completed.
2. Electrical connections completed (fan switches, thermostats).
3. Duct connections completed.
4. Drain line draining into drain pan.
5. Filters correctly installed and free of construction debris.
6. Motor-blower assembly rotates freely.
7. Units hydrostatically tested and air vented/purged.

INSTALLATION

To The Installing Contractor

After all units have been installed, proper care must be given to the initial start-up of the airconditioning system to avoid possible condensation problem.

The formation of condensation occurs on surfaces that are colder than the dew point of the surrounding air. The use of automatic water flow control valves installed on the coils aids in the reduction of condensate formation. The units which were installed should be checked to determine whether or not they were purchased with a water flow control valve installed in the chilled water line of the coil.

If the system was installed without water flow control valves, thermostat control, constant fan operation, or positive coil shut-off when not in operation, the system start-up must be done properly to avoid the formation of condensation. Although a separate procedure should be utilized for each individual job considering the peculiarities of the system, the main intent is to lower the water temperature, gradually, while introducing no moisture laden air into the building which could cause condensation on cold parts of the units.

A suggested procedure is as follows:

1. Start the chilled water at 20deg C temperature.
2. Care should be taken to assure the building completely/almost closed.
3. Corridor supply, toilet and kitchen exhaust fans should not be turned on until the chilled water is brought down to 10 deg C.
4. Reduce the chilled water supply temperature about 2 degs C per day until the watertemperature is at design.
5. During the above, the fan coil speed controller is set to low or medium speed.
6. Turn the corridor supply fans on as the chilled water temperature reaches 10 deg C.

To The Building Manager

If condensation occurs and no water control valve is installed on a unit, do one of the followings.

1. Either turn all units to low fan speed, or when a thermostat is provided for fan cycling, set it for intermittent blower operation, or
2. Shut off the hand valves on the individual unit coils which is not presently in operation.

OPERATION

FANS

The fan will run continuously unless the fan selector switch is manually turned to the off position (except for on-off fan cycle control). To select the desired speed, slide the lever to hi, med or low position.

COIL VENTING

When water is introduced into a coil, air is sometimes trapped in the coil tubing. This trapped air has the tendency to collect at the highest point in the coil. Therefore, a manual air vent is provided on each unit. When there appears to be air trapped in the coil, resulting in "bubbling" or "clanking" noises within the unit, release air from manual air vent. This is to allow the air to flow out of the air vent opening until a steady stream of water appears. Then release the valve.

PREVENTIVE MAINTENANCE

Dunham-Bush units are designed to operate continuously with only minor routine maintenance. The efficiency of the fan coil units is directly related to the amount of air passing through the coil and temperature of the water circulating through the coil.

AIR FILTERS

The function of the air filter is to remove foreign matter such as dirt, soot, pollen and certain other impurities from the air passing through it. A clogged or dirty filter not only fails to do the jobs for which it is designed, but it also impairs the operating efficiency of the unit by restricting the flow of air over the coil.

The importance of cleaning or replacing the filter before it becomes clogged cannot be too greatly stressed. The frequency with which a filter should be cleaned or replaced will depend upon the amount of dust and foreign material that enters a unit.

To clean, tap filter on the surface to dislodge heavy particles. Wash under stream of hot water (below 40 deg C) or drop it in the container filled with hot water.

Note: Under certain conditions, it may be necessary to change filters on a regular basis. In any event, they should be cleaned at least four times a year.

INTRODUCTION

LUBRICATION

The fan motor are equipped with lubrication free bearings.

COILS

Clear coil by removing case and brushing between fins with a stiff nylon brush. Brushing should followed by cleaning with a vacuum cleaner. The coil may also be cleaned by using a high pressure air hose and nozzle, if compressed air source is available. It should be pointed out that if cleaned air filters are used and taken care of properly, the coils will not need cleaning.

DRAIN PIPES

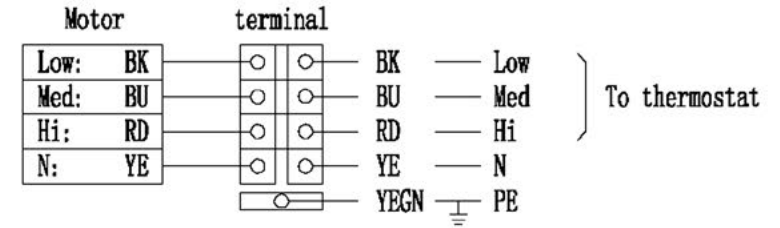
The drain pipe should be checked to assure that it is not clogged.

REPLACEMENT PARTS

Replacement parts are available through your Dunham-Bush sales representative. When ordering parts, you must supply:

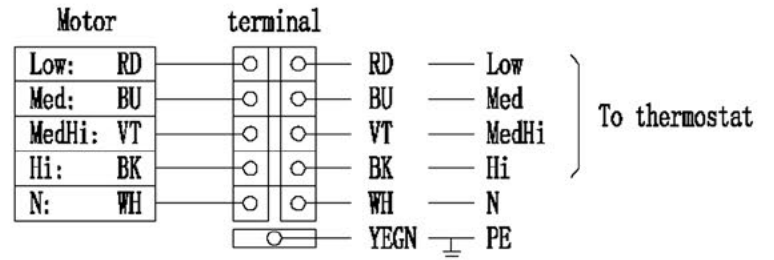
1. Model number of unit.
2. Serial number of unit.
3. Motor number (if motor is required).
4. Complete and accurate description of the part to be ordered.

CR WIRING DIAGRAM



CAUTION: Wrong termination cause motor damage.

CRH WIRING DIAGRAM



CAUTION: Wrong termination cause motor damage.