INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR

FLUID AND STEAM COILS

APPLICATION

Coilmaster coils are used for the purpose of heating or cooling air over a wide range of applications. Each coil is made custom and was designed for the sole purpose for which it was engineered. Using a coil for a purpose other than it was designed could void the warranty and damage the coil. This includes, but is not limited to, the fluid within the coil, the pressure it was designed for, the environment, and the air characteristics. Please consult the factory if there are any changes in the application of the coil.

INSPECTION

Coilmaster takes special care to inspect, package and secure each coil before it is shipped from the factory. Once the coil is received at the job site, take time to carefully inspect the coil for any damages that may have occurred during shipping. If there were any damages that occurred during shipping, make sure they are indicated on the freight bill and acknowledged by the carrier.

When unpacking the coil, be careful not to damage the finned surface. The fins are thin and can be bent easily resulting in a loss of performance. Gloves should be worn at all times while handling the coil to prevent cuts from the fins, sheet metal, or packing materials.

All refrigerant coils will be shipped with a nitrogen charge in the coil. If the coil arrives without a pressure charge, contact the factory before installation.

HANDLING THE COIL

Each coil needs to be handled with care to avoid damage to the coil and personal injury. Coils should be lifted by the casing only, no force should be applied to the connections, headers, tubes or fins. This could result in bending the material and creating a leak or weakening a joint. If the coil is too heavy to lift by one or two people, the coil can be lifted into place using straps around both ends of the coil and secured. The coil should be handled carefully and not dropped or jarred. Avoid hitting connections and headers on anything to insure the proper connection alignment and to prevent creating a possible leak. Gloves should be worn when lifting or positioning the coil to avoid injury.

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INSTALLATION

SECURING COIL

Coilmaster coils must be installed using rigid framing and supported by the casing at both ends. For longer coils, support must be provided along the entire length of the coil. The casing can be used to secure the coil in place by bolting it to the duct work or frame deemed suitable by the installer. The connections, tubes or headers should never be used for supporting or securing the coil in place. Coilmaster coils are shipped completely assembled and ready for installation.

Steam distributing (non-freeze) coils are a tube within a tube design, consisting of a 3/8" or 5/8" inside distribution tube and a 5/8" or 1" outside condensate collection tube. These coils should be installed so that the tubes are pitched 1/8" per foot of finned length toward the return connection end of the coil. This allows proper drainage of condensate from the coil. All other coils must be mounted level to insure complete drainability.

DRAIN PAN

Cooling coils must be installed with proper condensate draining capabilities. If two or more coils are stacked in a common bank, it is recommended that an intermediate drain pan be added in between the stacked coils for adequate condensate removal. Drain pans must be installed in a fashion that will allow complete drainage. To help prevent condensate carryover and loss of performance, air baffling should be used to prevent air bypass around the coil.

BAFFLING

Safe offs should be used on the entering air side to insure the complete volume of air is flowing through the finned area of the coil for optimum performance.

PIPING

When connecting the piping to the coil, the supply line typically goes to the lower connection on the leaving air side for water coils. Check the coil connection hand designation to make sure it matches the system air flow. Coils should be installed with heat transfer medium counter flow to the air flow for optimum heat transfer. (refrigerant and water coils) For standard steam and condenser coils, the supply connection is typically the upper connection on the leaving air side. Refer to figures 1 and 2 on page (4) for recommended piping diagrams.

Thread tape or pipe compound should be applied to the pipe threads before connecting supply and return piping to prevent leaking at the connections. All threaded connections need a backup wrench to secure the coil connection while it is being threaded to prevent breakage or stress. Copper threaded connections are squared to allow a backup wrench to be used during the installation. To properly do this, two wrenches are used. The same amount of torque is applied to both the wrench on the coil connection and the wrench on the piping as it is threaded to the coil connection.

All piping to coils must be supported independently to prevent fractures or stress on the headers or coil connections.

FILLING COIL

For water coils, it is important to get as much air out of the lines as possible. Before turning the water on, open the vent at the top of the supply header. Turn the water on until the coil is full and a stream of fluid flows out and then tighten the vent plug. Vent the coil once again to insure no air has accumulated in the system.

FREEZE PROTECTION

Water coils can freeze even while in use if the appropriate precautions are not used. Water coils can be used with a percent glycol solution to lower the freezing temperature of the internal fluid if the coil is operating at low temperatures. Table 1 shows the new freezing temperature based on the percentage of glycol used in the solution.

If a coil is to be exposed to freezing temperatures while it is not being used, it is important that the coil be properly drained of all moisture to prevent the possibility of freezing and rupture. Simply draining the fluid out of the coil may not be enough; water can remain in the coil. It is recommended that the coil be blown out with compressed air or a high pressure blower to insure that no water has collected at a low point in the coil.

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After draining the coil, disconnect the supply and return connections. Hook the blower or compressed air to the return (or top) connection and blow any remaining water out of the coil. To insure no fluid "leaks" back into the coil while it is not in use, leave the connections disconnected from the supply and return lines until the coil is ready to be filled again for operation.

1. FREEZING TEMPERATURES OF WATER-GLYCOL SOLUTIONS

% Ethylene Glycol (by volume)	Freezing Point (Degrees F)
0	32° F
10	25° F
20	17° F
30	5° F
40	-13° F
50	-34° F
60	-54° F

% Propylene Glycol (by volume)	Freezing Point (Degrees F)
0	32° F
10	26° F
20	19° F
30	8° F
40	-7° F
50	-29° F
60	-60° F

GENERAL MAINTENANCE

Periodic coil maintenance is important in insuring that the coil is achieving its optimum performance. Be sure that the coil is out of service before performing any maintenance or repairs. Use proper caution techniques regarding safety for any maintenance or repair. Visually inspect the coil for any leaks, dirt, or fin damage.

Coils equipped with Freeze Block option should periodically be inspected to insure that the Freeze Block relief valve is free of debris. Using an adjustable wrench to securely hold the fitting on the expansion header, the valve can be removed from the header fitting with a hex wrench. This will expose the inlet screen to the valve.

Use a brush or compressed air to clean any debris from the screen. A back-up wrench should be used to hold the header fitting while re-installing the Freeze Block valve. To prevent damage to the O-ring, do not over-tighten the valve

VENTING

For water coils, vent the system occasionally to remove any air by loosening the vent plug at the top to allow the excess air to escape. This should be done with the fluid flowing though the system to insure all the air is removed.

CLEANING

Making sure the coil stays clean is an important part of maintaining a Coilmaster coil. Proper air filtration (where possible) is necessary to insure that the coil is achieving its optimum performance. Keeping the air filters clean allows the flow through the coil to be as uniform and unrestricted as possible.

Visually inspect the finned surface to look for dirt or other particles obstructing the airflow. Light dirt build up can be removed by vacuuming or using a soft bristled brush to prevent fin damage. More severe dirt accumulations might require the use of a pressure washer. Extreme care should be used in the use of a pressure washer, as improper use can damage the fins. Clean the coil from the leaving air side so foreign material will be washed out of the coil rather than pushed farther into the fins. Light dirt accumulations or oil on the fins can be removed with the use of a commercial coil cleaner. If the fins are bent over, they can be straitened out using a properly sized fin comb.

Keeping the fluid that is flowing though the coil free of dirt and contaminants is also important to prevent corrosion to the interior of the coil.

REPAIRS

If a Coilmaster coil is in need of repair, contact the sales representative from whom the coil was purchased or the factory prior to performing any field repair. Failure to do so may void the warranty. Any repairs in the field must be performed by a qualified individual(s) deemed competent in coil repair. Moderate fin damage can be repaired with the use of a fin comb. The fin comb must match the spacing of the fins on the coil.

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RECOMMENDED PIPING DIAGRAMS FOR WATER AND STEAM COILS

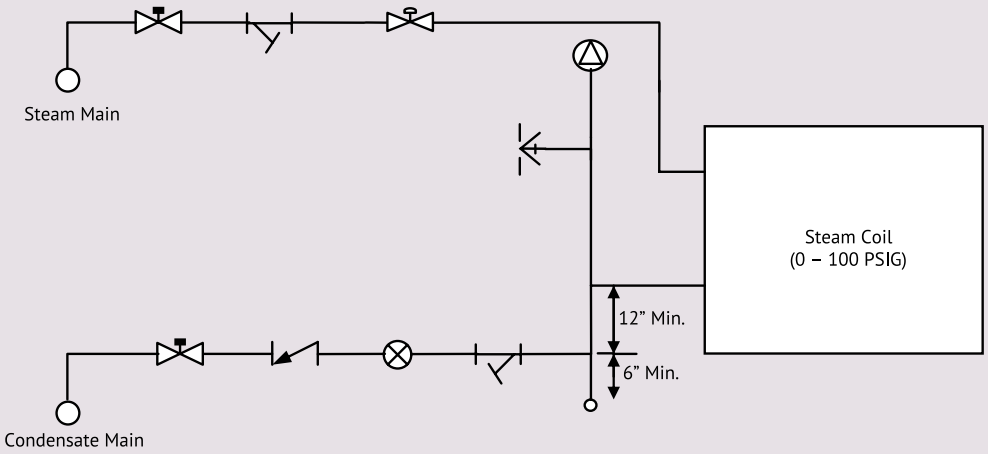


FIGURE 1. PIPING FOR STEAM COIL

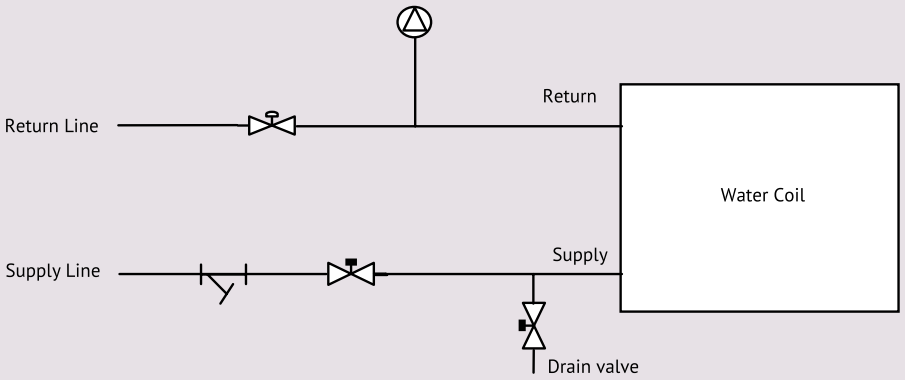
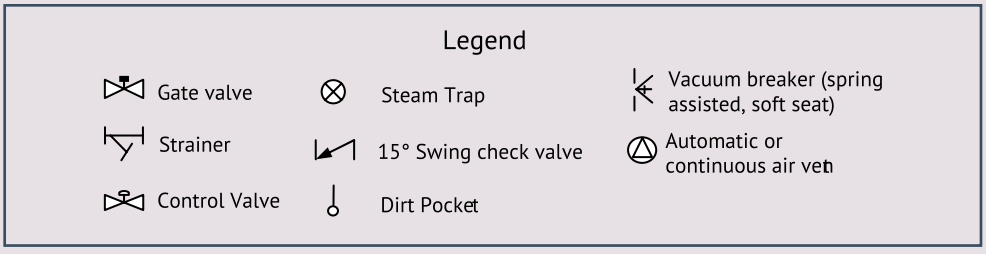


FIGURE 2. PIPING FOR WATER COIL



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