

Standard Service / Installation / Operation Manual

Type "Q," "Y," & "R" Water Heat Transfer Coils



Please consult your local representative or the factory for warranty issues.

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3.0 HANDLING

The instructions contained in this section must be followed to avoid injury to personnel or damage to the coil.

Do not lift or handle the coil by the face area, headers, tubes, or connections.

Wear gloves when handling coils and be careful around fins and other edges of metal.

Rigging and lifting methods may include slings at both ends of the coil, which encompass both coil channels. Lifting devices deemed suitable by the user may be attached at each end of the top coil channel. All slings, devices, and apparatus should be of a rating suitable for the loads they will be subjected to, and ensure that no deformation of the coil casing occurs. DRS Marlo Coil assumes no responsibility for lifting apparatus, devices, and methods used by others for rigging and lifting.

4.0 STORAGE

In the event that the coil will not be put into service immediately, certain precautions should be taken. The coil should be stored indoors in a clean, dry location that is level and sturdy. Coil connections must be capped.

When placing coils into storage after being in service, coils must be completely drained. On Type "Q," "Y," and "R" coils, all plugs must be removed to assure complete drainage. Coils should be blown out utilizing compressed air, blown through the header connection.

If it is necessary to store the coil outdoors, the coil should be stored off the ground and wrapped fully with a tarpaulin or plastic.

Periodically inspect the coil to be sure the finned surface area is free of accumulated dirt or dust, and to be sure no damage has occurred.

5.0 INSTALLATION

Install the coil with the casing level. The coil should be supported at a minimum with supports at each end. Longer coils may require intermediate supports to prevent casing from bowing. Coils may also be supported by suitable ductwork by bolting or welding the entire casing perimeter to the duct on both sides. The entering side of the coil face should be safed-off (baffled) to ensure that all air flows through the coil core. All duct and safe-off connections should be sealed to prevent air leakage. Failure to do so will result in loss of performance.

Do not exceed the maximum design temperature, pressure, or flow rate.

Coils should always be installed so the supply connection is at the bottom and on the leaving air side. Failure to do so will result in loss of performance.

Threaded piping hook-ups should always be made using two pipe wrenches. Use one wrench to prevent movement of the coil connection, and the other to tighten the joint. All piping must be fully supported at sites other than the coil.

If the coil will be subject to severe expansion and contraction, flexible connections are recommended. A typical piping arrangement is shown in Appendix A. *Refer to "Appendix A - Typical Water Coil Piping," page 6.*

Once the coil is piped, it should be filled with the working fluid. The coil vent is located on top of the return connection and should be loosened during the filling process. Once the flow from the vent becomes completely liquid, re-tighten the vent plug. Flow liquid through the coil for several minutes and periodically vent the coil to ensure all air has been removed. Once the coil is in operation, check the piping connections for leaks. Re-tighten connections as necessary. Do not over-torque. *Refer to "Water Coil Start Up Check List," page 6.*

5.1 COIL START-UP/OPERATION

Open all valves in return lines. With fan "OFF," slowly open supply valves allowing partial flow in graduated steps for 1-3 minutes until full flow is achieved. If the coil is subject to air vs. fluid delta temperature greater than 75°F, allow the coil to "heat soak" for 15 to 30 minutes before energizing the fan. This reduces the risk of damage to the coil due to thermal shock.

6.0 MAINTENANCE

WARNING

PRIOR TO PERFORMING ANY MAINTENANCE, THE COIL SHOULD BE CHECKED TO BE SURE IT IS OUT OF SERVICE. GLOVES, PROTECTIVE CLOTHING, AND EYE PROTECTION SHOULD BE WORN AT ALL TIMES WHEN CLEANING THE COIL TO PREVENT CUTS TO THE HANDS AND FINGERS.

6.1 PERIODIC VENTING

Periodically vent the coil to remove accumulated air.

6.2 INSPECTION

The coil should be visually checked periodically to assure that finned surfaces are free of dirt, debris, and other airborne deposits.

The coil (and system) should also be checked periodically for any signs of leakage or malfunction.

6.3 CLEANING/INSPECTION OF INTERNAL SURFACES

1. External cleaning of the coils may be accomplished by employing either of the following methods:

Large debris may be removed by hand.

Dirt or dust may be removed by brushing or vacuuming the face of the coil on the air entering side.

A solution of warm water and soap, or detergent, may be used to remove severe dirt build-up. A soft bristle brush should be used to avoid damaging the finned surface area. Gently scrub dirt build-up from the air entering side of the coil face, the surrounding areas, and the air leaving side of the coil, as required. Rinse the area with clean water, being careful to avoid getting water into other equipment, especially electrical devices, filters, etc.

Low-pressure steam may also be used to clean the coil. Cover any equipment, wiring, etc., which may be affected by the steam spray. Using a wand, spray the steam through the coil face in the direction opposite the airflow until all dirt is removed.

2. Internal cleaning of the coils may be accomplished by the following method:

Remove the box header and/or box return. *Refer to "Box Header/Box Return Removal Instructions," page 4.*

Use a suitable size brush to dislodge debris from inside the coil.

Flush dislodged debris from the coil and drain pan.

Replace gaskets and reinstall the removed box header and/or box return. *Refer to "Box Header/Box Return Installation Instructions," page 4.*

Follow the proper bolt tightening sequence to torque the mounting bolts. *Refer to "Figure 6-1 - Tightening Sequence," page 4.*

3. After cleaning, inspect the coil and repeat cleaning as necessary. When the area has been completely cleaned, dried, and inspected, re-install any filters, access panels, etc. that may have been removed for cleaning. Any disconnected electrical power may be reconnected at this time.

6.4 BOX HEADER/BOX RETURN REMOVAL INSTRUCTIONS

Close valves on the supply and return lines. Disconnect supply and return lines from removable box header and/or removable box return.

Open all drain valves or drain plugs in the coil. Remove vent plug (if equipped) to aid in draining the coil.

When all water has drained from the coil, loosen the nuts securing the box header/box return to the main housing of the coil to allow any remaining water to drain from the coil.

Completely remove the nuts securing the box header/box return to the main housing of the coil.

Remove the box header and/or box return and inspect for damage or blockage.

6.5 BOX HEADER/BOX RETURN INSTALLATION INSTRUCTIONS

Close all drain valves or drain plugs.

Apply anti-seize lubricant to weld studs and nuts.

Following the tightening sequence shown in Figure 6-1, tighten the nuts to the torque listed on the Assembly Drawing.

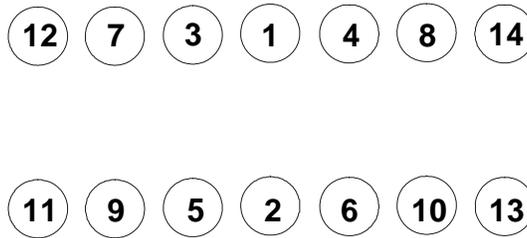


Figure 6-1 - Tightening Sequence

Reconnect supply and return lines to removable box header and/or removable box return.

Test the coil for leaks per the installation instructions.

When the coil has been leak tested and is free from leaks, allow it to sit for 24 hours. Then re-tighten the mounting nuts to the appropriate torque, following the tightening sequence in Figure 6-1.

7.0 REPAIR

If it is believed that the coil is in need of repair, the DRS Marlo Coil sales representative from whom the coil was purchased, or the factory, should be called.

Unauthorized repair of the coil may result in a voiding of the warranty.

8.0 REMOVAL FROM SERVICE

If the coil is removed from installation, follow the storage instructions in section 4.0.

9.0 TROUBLESHOOTING

Once a coil has been properly installed, it should provide the required cooling/heating conditions. Situations may arise which preclude normal functioning of the coil. The following chart should be consulted for troubleshooting.

Problem	Situation	SOLUTION
Liquid Leakage	Coil Piping Connection Loose/Leaking	Re-tighten connection. If unsuccessful, undo connection, apply thread sealant, and reassemble.
	Damaged Coil During Shipment	Contact factory.
	Excessive Expansion/Contraction During Operation	Contact factory.
	Corrosion of Coil Materials and/or Joints	Contact factory.
	Coil Freeze-Up	Contact factory.
Air Leakage At Coil Face Connection	Bypass Around Coil Face	Re-connect ductwork and/or safe-offs using proper sealing techniques.
Air Pressure Drop Too High	Incorrect Measurement Technique or Improperly Balanced	Follow manufacturer's directions for devices being used. Consult SMACNA manual on testing, adjusting, and balancing.
	Restricted Airflow Entering or Leaving Ductwork	Allow adequate duct lengths for transitions to coil face.
	Coil Fins Are Dirty	Clean coil core per maintenance instructions.
Liquid Pressure Drop Too High	Improper Measurement Technique or System Improperly Balanced	Follow proper techniques for devices being used. Consult SMACNA manual on testing, adjusting, and balancing.
	Restrictions In Piping	Change piping so same line sizes are used as coil supply and return connections. Changes to line sizes should be made further upstream/downstream of coil.
Leaving Air Temperature Too Low/High	Improper Measurement Technique or System Improperly Balanced	Make sure proper techniques and devices are being used. Make sure manufacturer's directions for devices are being followed. Consult SMACNA manual on testing, adjusting, and balancing.
	Coil Fins Are Dirty	Clean coil core per maintenance instructions.
	Air Entrainment in Liquid System	Check water for a foamy appearance. If present, repair system leaks and/or install an air separator to remove air from liquid.

Water Coil Start Up Check List

Job Name: _____ Date: _____

DRS Marlo Coil Model Number: _____ By: _____

Serial Number: _____ Tag: _____

- Check Overall Appearance of Coil
- Coil Installation Level
- Coil Supported at Each End or Around Full Face Perimeter on Both Sides
- Coil Installed with Supply Connection at Bottom and on Leaving Air Side
- Duct Connection Sealed to Prevent Leakage
- Piping Supported at Locations Other than Coil
- Piping Connections Tight and Leak Free
- Air Purged from Coil
- Coil Vented Periodically to Ensure All Air Is Removed (Performed after coil has been in operation for several minutes)
- Check Torque on Bolts of Box Header or Box Return

APPENDIX A TYPICAL WATER COIL PIPING

