



# Duramix Heavy Duty Face and Bypass Heating Coils Installation and Maintenance

*These installation, operation and technical instructions should be used by experienced personnel as a guide to ensure that Armstrong's Duramix Heavy Duty Face and Bypass Heating Coils function in a correct manner. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact your local representative or Armstrong if further information is required.*

## Face and Bypass Heating Coils

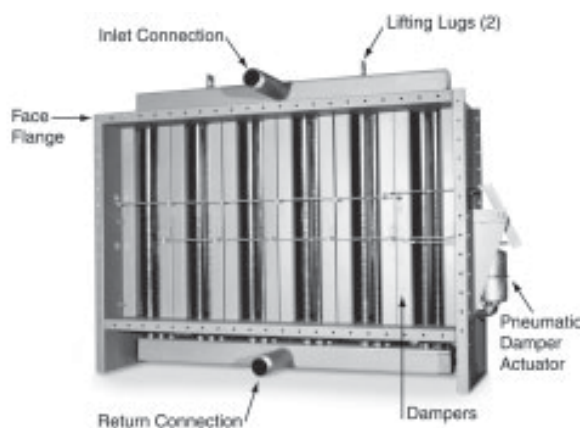
In steam coils, as in all coils, successful operation and a long, trouble free service life depends upon:

1. The manner of installation, including the design of the coil mounting and piping - with particular emphasis on trapping, air venting and avoidance of transferring piping loads and vibrations to the coil.
2. Operating conditions which are within design parameters.
3. The method of operation.
4. The thoroughness and frequency of cleaning required.

Following these simple guidelines will help you achieve maximum coil performance.

## Receipt and Storage

1. Upon receiving your shipment, inspect the following for damage:
  - Damper linkage
  - Damper control linkage
  - Finned tubes and dampers
  - Casing for damage
2. Notify carrier immediately of any damage sustained in transit.
3. Check unit nameplate located on the top header to ensure size is correct as ordered.
4. If coils are not installed immediately, store under cover in a dry heated area free of potential damage from personnel and/or equipment.



## Handling and Lifting

The unit is shipped, bolted from below, on a wooden skid making on site lifting and handling with a forklift possible. However, unit can be unstable on the forks and caution should be taken to properly secure unit during handling.

Each unit is also provided with two lifting lugs located on the top header for lifting by means of an overhead crane.

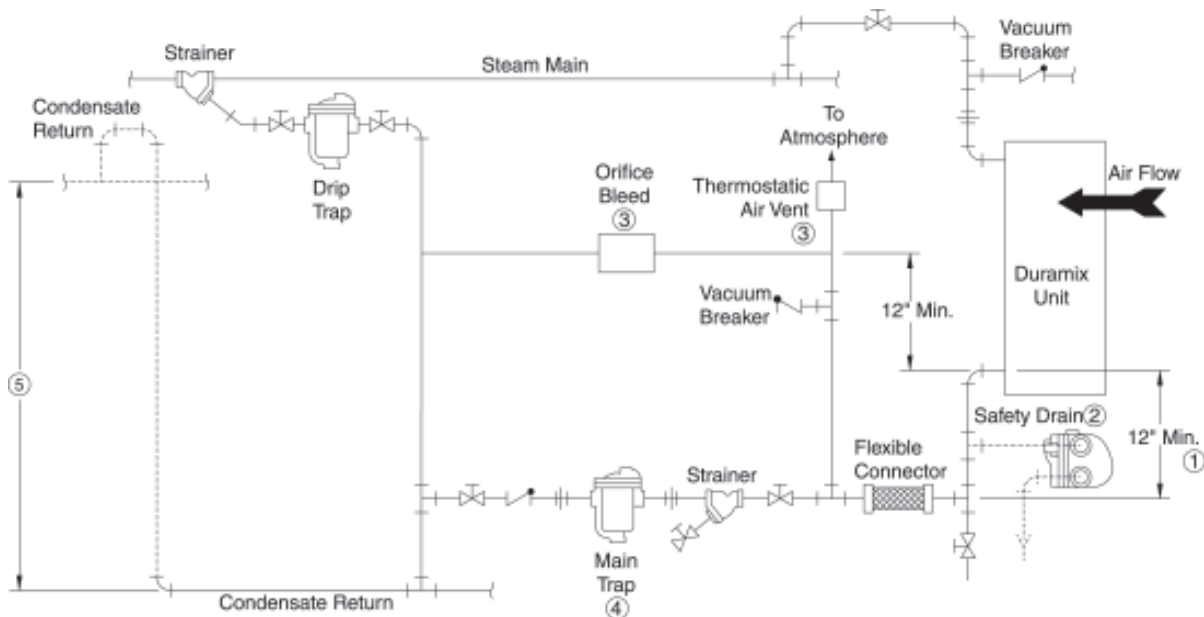
## Installation and Mounting

1. Remove shipping bolts from the wooden skid and the damper protective wooden sheets.
2. Install the unit with the tubes vertical only. Do not arrange with tubes horizontal.
3. The unit must be set "level" for proper drainage.
4. Provide a minimum 36" space down stream of the unit for mixing of by-passed and heated air.
5. Support the unit by resting the casing directly on the floor or other support structure.
6. Support unit and piping individually to prevent undue strains on the steam and condensate connections.
7. Ductwork can be attached to the unit by bolting the casing perimeter face flanges. The casing flanges must not be used to support the ductwork.

## Piping

1. Steam and condensate pipes should be the same size as coil connections. Maintain connection size from the coil back to the steam main and from the coil to the steam trap takeoff.
2. The return header must be free to float and must not be restricted by condensate return piping. Use **flexible connections** for freedom of movement.
3. Install strainers with blowdown valves before all control valves and traps.
4. Install a drip trap prior to the heating unit to prevent the introduction of condensate.
5. Install a vacuum breaker in the steam line piping prior to the unit. Also, install a vacuum breaker on the downstream side of the unit for better drainage during shutdown.
6. Wherever possible, steam should enter the coil vertically rather than from the side.
7. Vent non-condensable gases to ensure maximum heat transfer and minimum internal corrosion. Venting can be with a fixed orifice bleed, independent thermostatic vent or by using a float and thermostatic steam trap.
8. Use only traps such as the inverted bucket or float and thermostatic which drain continuously. See Table on page 3 for steam trap selection. Consult you Armstrong Representative if you need assistance.
9. Install a dirt pocket prior to the steam trap. You may also install a gate valve at the bottom of the dirt pocket to facilitate drainage during shutdown periods.
10. Size traps to handle the maximum calculated load using a service factor of 3. Consult your Armstrong Representative if you need assistance.
11. If the condensate return system is overhead contact your local Armstrong Representative.
12. Install a 90° elbow (full size of header) on the return header connection directed downward for connection to condensate piping. Install a flexible connector in the first horizontal run closest to coil return header.

**Piping practices for Duramix steam heating coils are shown below.**



**Notes:**

1. 24" minimum if safety drain is used.
2. Safety drain is used if pressurized or overhead. Armstrong's pumping traps or Posi-Pressure Control system provides additional protection.
3. The air vent may be either an orifice bleed or thermostatically operated element.
4. The main trap may be either an Inverted Bucket or a Float & Thermostatic type depending upon the service conditions. See Table below for steam trap recommendations. Note: Inverted bucket steam trap required with Posi-Pressure Control system.
5. Overhead condensate return option.

<b>Armstrong Steam Trap Selection Guide</b>			
<b>Equipment</b>	<b>Selections</b>	<b>Constant Pressure</b>	
		<b>0 - 30 psig</b>	<b>Above 30 psig</b>
Duramix	1st Choice	IBLV	IBLV
	2nd Choice	F&T	F&T

**Control Arrangement and Adjustment**

The required leaving air temperature from the unit is controlled by automatic positioning of the face and by-pass dampers via a pneumatic actuator in response to the signal produced by a thermostat located in the downstream ductwork. The temperature sensing element shall be placed not closer than 36" from the face of the unit. This sensing element must be positioned in the center of the face area, horizontally across both face and bypass sections of the unit.

Duramix units are supplied from the factory complete with a standard pneumatic damper actuator, and a damping mechanism adjusted for the correct stroke. No field adjustments are required.

## Operation

Once coils are installed properly, their performance and service life depends on a few simple guidelines for maintenance and operation.

1. Clean the piping system by blowing down all strainers prior to start-up.
2. On each start-up, feed steam to the coils slowly to avoid thermal shock.
3. Make sure the steam has been on for a minimum of 15 minutes prior to starting fans and opening dampers or adjusting thermostats and control air pressure to the units.
4. Make sure operating pressure is within design limits.
5. To provide maximum freeze protection, maintain a minimum steam pressure of 5 psig to coils exposed to air temperature below 40°F (5°C).

## Shut-Down

Drain condensate during shutdown to prevent internal corrosion.

1. Shut off the airflow (especially with subfreezing entering air).
2. Shut off steam.
3. As soon as possible, open drip leg in return main line and allow condensate to drain. If safety drain is used, the coil will drain automatically.

## Maintenance

Inspect and clean coils periodically to maintain adequate airflow and to keep fan loading at design. Loose nuts, bolts and screws should be tightened. The damper control linkage and the damper control arms should be inspected for wear and replaced if worn. Uneven heating as well as freezing failure can be expected in the coil if worn damper control arms are not replaced.