AUTOMATIC TEMPERATURE CONTROL DRAWINGS

AHU & PACKAGED RTU UNIT DIAGRAM

Typical Controls Installation

This document is intended to be a reference for technicians and shows installation considerations for common AHU and RTU applications

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INTERSTATE HVAC CONTROLS

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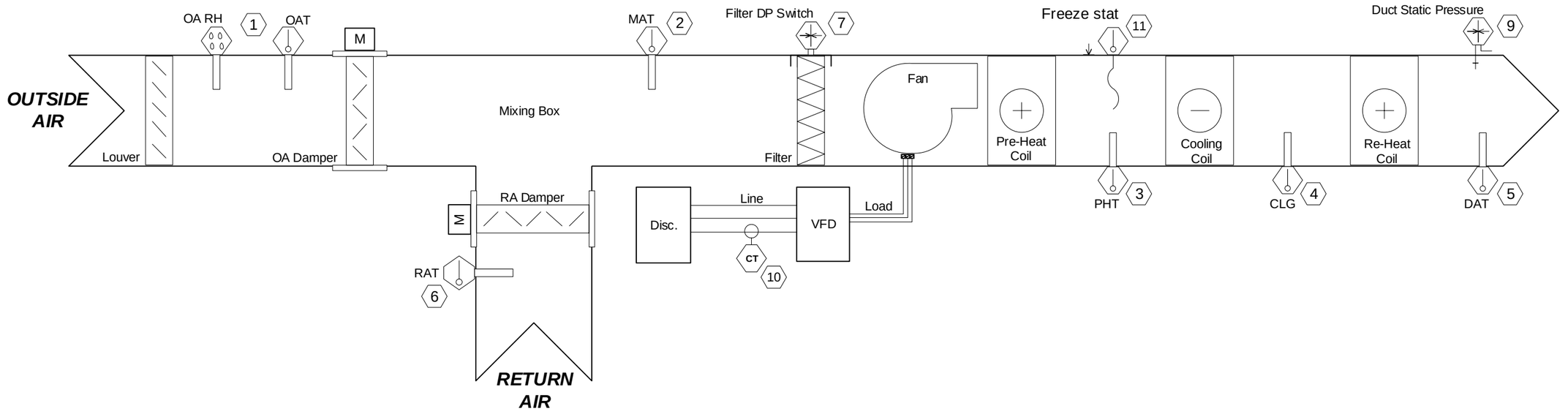
DISTECH CONTROLS®

Johnson Controls

Air Handler Unit Detail

Note: Diagram intended for reference only. Refer to manufacturer's instructions for proper installation for specific application.



1. OUTDOOR AIR AND RELATIVE HUMIDITY SENSORS
   OAT and RH sensors must be exposed to outside air at all times. Locate sensors outside of unit or inside OA duct between louver and OA damper.

2. MIXED AIR TEMPERATURE SENSOR
   Located MAT sensor to provide stable, average reading of well-mixed air at most downstream point of mixing box.

3. PRE-HEAT TEMPERATURE SENSOR
   Locate PHT sensor one duct-width downstream of pre-heat coil as space permits.

4. COOLING TEMPERATURE SENSOR
   Locate CLG sensor one duct-width downstream of cooling coil as space permits.

5. DISCHARGE AIR TEMPERATURE SENSOR
   Locate DAT sensor to provide stable, average reading of duct temperature. Typical DAT location is two duct-widths downstream of last heating or cooling element to minimize air stratification.

6. RETURN AIR TEMPERATURE SENSOR
   Locate RAT sensor upstream of return air damper.

7. FILTER DIFFERENTIAL PRESSURE SWITCH
   Install high pressure pickup port on upstream side of filter and low pressure pickup port on downstream side of filter. Refer to page 5 for air switch detail.

8. DUCT STATIC PRESSURE
   Locate duct static pressure pickup port downstream of unit's last heating or cooling element. Refer to page 5 for air switch detail.

9. FAN PROVING
   Fan status can be proved by 1) CT or VFD status; 2) by sensing total velocity with a differential pressure sensor and pitot tube; or 3) with a differential pressure switch and pitot tube. Install CT on Line side of electrical disconnect before VFD, if present. Refer to page 5 for differential pressure sensor and air switch detail.

10. FREEZE STAT
    Locate freeze stat capillary across first water-based coil in series, if possible, or one duct-width downstream of first water-based coil in series. **Freeze stat should never be exposed to untempered outside air.** Refer to page 4 for freeze stat detail.

INTERSTATE HVAC CONTROLS

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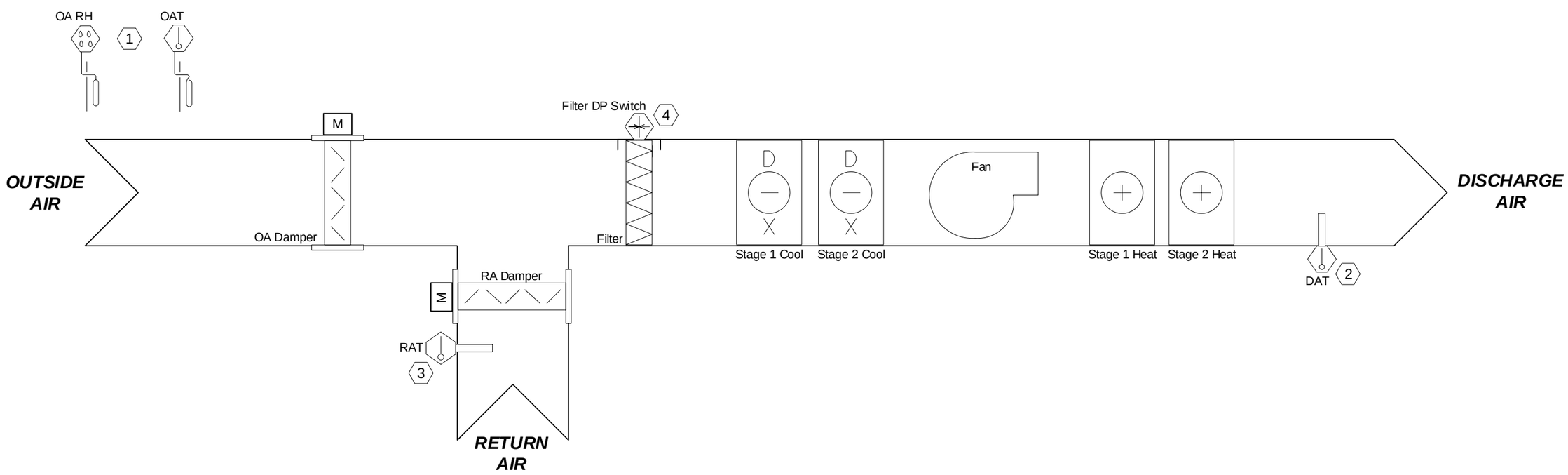
Packaged RTU Unit Detail

Note: Diagram intended for reference only. Refer to manufacturer's instructions for proper installation for specific application.



1. OUTDOOR AIR AND RELATIVE HUMIDITY SENSORS
   OAT and RH sensors must be exposed to outside air at all times. Locate sensors outside of unit or under outdoor air intake hood.

2. DISCHARGE AIR TEMPERATURE SENSOR
   Locate DAT sensor to provide stable, average reading of duct temperature. Typical DAT location is two duct-widths downstream of last heating or cooling element to minimize air stratification.

3. RETURN AIR TEMPERATURE SENSOR
   Locate RAT sensor upstream of return air damper.

4. FILTER DIFFERENTIAL PRESSURE SWITCH
   Install high pressure pickup port on upstream side of filter and low pressure pickup port on downstream side of filter. Refer to page 5 for air switch detail.

INTERSTATE HVAC CONTROLS

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Freeze Stat Instructions

Note: Diagram intended for reference only. Refer to manufacturer's instructions for proper installation for specific application.

FREEZE STAT INSTALLATION

TYPICAL INSTALLATION

Locate the sensing element where it can sense the average temperature of the duct or coil to be controlled.

Locate the thermostat case where the ambient temperature is always warmer than the set point.

Thermostat enclosure to be surface mounted; avoid locations subject to excessive vibration.

Install the capillary sensing element across the face of the coil, horizontally serpentine only. If too much of the element is vertical, it will not operate properly.

Avoid sharp bends or kinks in the sensing element. Install the thermostat in an upright position so that the bellows point down and the capillary tube exits the bottom of the unit.

Do not uncoil more element or capillary than is required for the application.

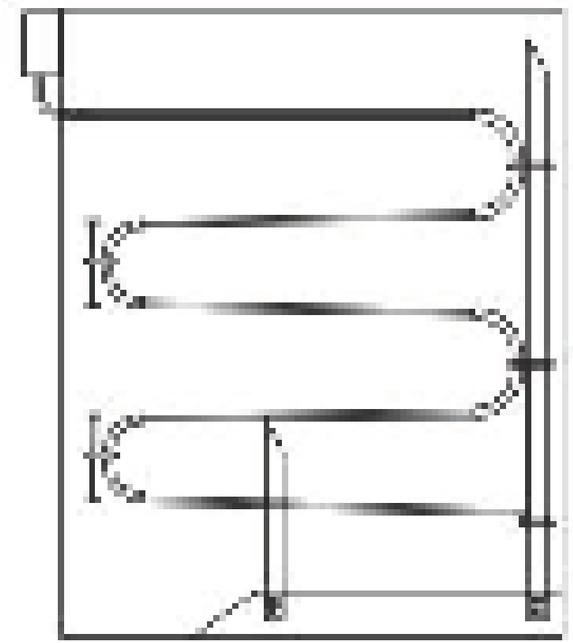
Do not sharply bend the element or capillary more than necessary. Bending hardens the element and makes it brittle. If the element or capillary can be subjected to vibration, protect any surface that makes contact.

Mount the element on a coil; for example, in an area where freezing can occur, or mounted in a duct. Use as much of the element as necessary for maximum protection. Use metal straps to fasten the element to the coil to be controlled. Use clips for mounting the element in a duct.

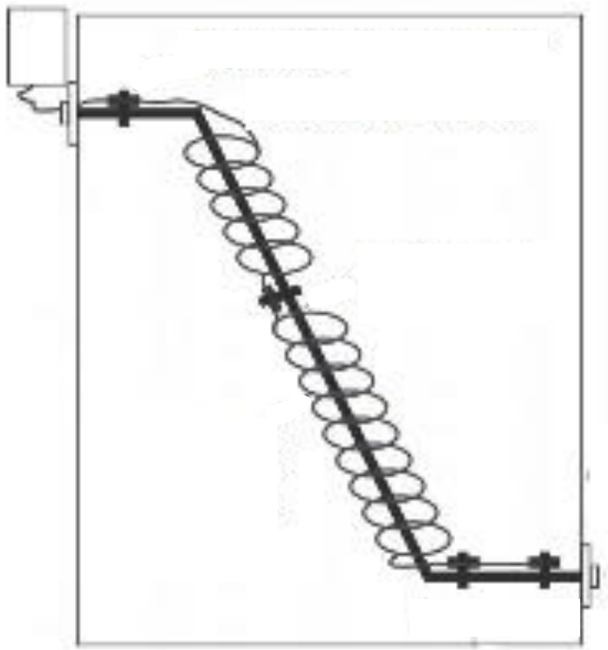
INACCESSIBLE LOCATION

Element may be coiled around 3/8 in. copper pipe or 1/2 in. EMT and inserted into duct when mounting location is inaccessible.

Starting at the bottom of the coil, distribute the sensing element around the support and tie-wrap it securely in place. Keep the loops horizontal or inclined slightly downward (not to exceed 5°) and uniform in size.



Typical Installation



Inaccessible Location Installation

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PAGE DESCRIPTION: Freeze Stat Instructions

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Pressure Sensor Applications

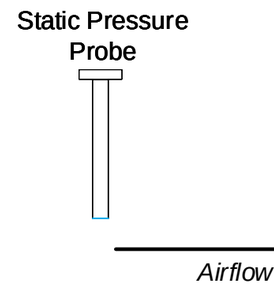
Note: Diagram intended for reference only. Refer to manufacturer's instructions for proper installation for specific application.

1. FILTER DIFFERENTIAL PRESSURE
   Static probes are installed to both high and low pressure ports. High pressure port installed on upstream side of filter; low pressure port installed on downstream side of filter. Both probes measure duct static pressure and compare duct static pressure before and after filter.

2. FAN PROVING WITH STATIC PRESSURE
   Static pressure probes are installed upstream & downstream of the fan. The upstream probe is connected to the low pressure port of an air pressure switch. The downstream probe is connected to the high pressure port. When the fan is running, the static pressure will be increased downstream of the fan and the air pressure switch will make.

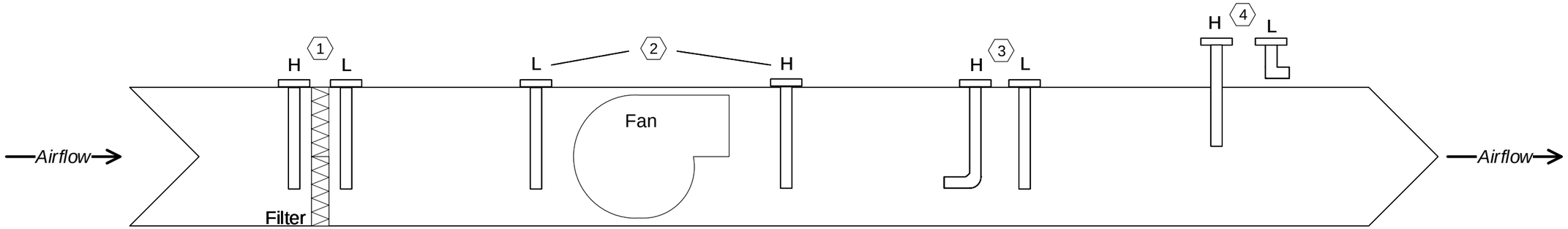
3. FAN PROVING WITH TOTAL & STATIC PRESSURE
   Both a Pitot Probe and Static Probe are installed downstream of the fan. The Static Probe is connected to the low pressure port of an air pressure switch. The Pitot Probe senses a combination of static & velocity pressure and is connected to the high pressure port. When the fan is on and air is flowing past the sensors, the pressure is increased at the Pitot Probe and the air pressure switch will make.

4. DUCT STATIC (UNIT DISCHARGE PRESSURE)
   Ideal sensor location will measure duct static pressure changes from unit discharge. Static probe connected to high pressure pickup port is installed in duct. Low pressure is outside of duct and exposed to space pressure.



A **Static Pressure Probe** has an opening that is perpendicular to the airflow direction. This probe senses only static pressure.

A **Pitot Probe** (aka Total Pressure Probe) has an opening that points upstream. When air is flowing through the duct, the pressure at this probe is the static pressure plus the additional pressure caused by air velocity.



INTERSTATE HVAC CONTROLS

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