

Document number 480938

# **AMS & AMD Damper Series for Honeywell Spyder Controller**

Installation, Operation, and Maintenance Instructions

Use this manual when AMS and AMD series dampers were purchased prior to June 1, 2015. After June 1, 2015, refer to Document Number 479830.

This manual is the property of the owner, and is required for future maintenance. Please leave it with the owner when the job is complete.

#### SAFETY WARNING:

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment.



Note: A minimum velocity of 300 fpm (1.5 m/s) is required.

#### RECEIVING AND HANDLING

Upon receiving dampers, check for both obvious and hidden damage. If damage is found, record all necessary information on the bill of lading and file a claim with the final carrier. Check to be sure that all parts of the shipment, including accessories, are accounted for.

Dampers must be kept dry and clean. Indoor storage and protection from dirt, dust and the weather is highly recommended. Do not store at temperatures in excess of 100°F (37°C).

Due to continuing research, Greenheck reserves the right to change specifications without notice.

# Pre-Installation Guidelines

The basic intent of a proper installation is to secure the AMS & AMD series damper into the opening in such a manner as to prevent distortion and disruption of damper operation. The following items will aid in completing the damper installation in a timely and effective manner.

- 1) Check the schedules for proper damper locations within the building. Visually inspect the damper for damage.
- 2) Lift or handle damper using sleeve or frame. Do not lift damper using blades, linkage, actuators, pick-ups, or jackshafting. When handling multiple sections assemblies, use sufficient support to evenly lift at each section mullion (see drawing). Do not drag, step on, apply excessive bending, twisting, or racking.
- 3) Do not install screws in damper frame that will interfere with unexposed blade linkage and

prevent damper blades from opening and/or closing.



4) Damper must be installed into duct or opening square and free of twist or other misalignment. Damper must not be squeezed or stretched into duct or opening. Out of square, racked, twisted or misaligned installations can cause excessive leakage and/or torque requirements to exceed damper/actuator design.

- 5) Damper and actuator must be kept clean, dry and protected from dirt, dust and other foreign materials prior to and after installation. Examples of such foreign materials include but are not limited to:
  - a) Mortar dust
  - b) Drywall dust
  - c) Firesafing materials
  - d) Wall texture
  - e) Paint overspray
- 6) Damper should be sufficiently covered as to prevent overspray if wall texturing or spray painting will be performed within 5 feet (1.5m) of the damper. Excessive dirt or foreign material deposits on damper can cause excessive leakage and/or torque requirements and inaccurate airflow measurement to exceed damper/actuator design.
- 7) ACCESS: Suitable access (actuators maintenance, etc.) must be provided for damper inspection and servicing. Where it is not possible to achieve sufficient size access, it will be necessary to install a removable section of duct.

#### Installation- Failure to follow instructions will void all warranties

- 1. Ensure the AMS or AMD series damper is mounted with airflow straightener upstream of the damper.
- Duct opening or opening square should measure 1/4 inch (6mm) larger than damper dimension and should be straight and level.
- 3. Use shims between damper frame and duct opening or opening space to prevent distortion of frame by fasteners holding it in place. Brace at every horizontal mullion and vertically brace at every 8 feet (2.4m) of damper width for strength. Dampers in high velocity (2000 fpm [610m per second]) may require more bracing. Note: Greenheck dampers are specifically designed and engineered for structural integrity based on model and conditions. Attachment, framing, mating flanges, and anchoring of damper assemblies into openings, ductwork, or walls is the responsibility of the installer. Design calculations for these retaining and supporting members should be determined by field engineers for that particular installation.
- Individual damper sections, as well as entire multiple section assemblies must be completely square and free from racking, twisting, or bending. Measure diagonally from upper corners to opposite lower corners of each section.



 Damper blades, axles, and linkage must operate without binding. Before system operation, cycle dampers after installation to assure proper operation. On multiple section assemblies all sections should open and close simultaneously.

## Installation cont...

6) Installing two section high AMD series together. AMD's more than one section high will be shipped separately in individual sleeves. The high and low pressure ports need to be plumbed together and then plumbed back to the pressure transducer.



## **Electrical Guidelines**

Electrical and/or pneumatic connections to damper actuators should be made in accordance with wiring and piping diagrams developed in compliance with applicable codes, ordinances and regulations.

### SAFETY CAUTION !

Verify power requirements before wiring actuator. Greenheck is not responsible for any damage to, or failure of the unit caused by incorrect field wiring. **SAFETY DANGER !** Electrical input may be needed for this equipment. This work should be performed by a qualified electrician.

Connect electrical connection to terminal strip as shown on drawing (see figure 1).

#### Setup and Operation for AMS and AMD Series Without Factory Supplied Controller

The factory supplied pressure transducer supplies a 0-10 VDC output that is proportional to the pressure measured by the airflow station (see *Figure 1*). Using the output from the transducer a controller can be programmed to calculate airflow using the formulas:

Ptransducer = (Transducer Output Voltage) \* (high Pressure Limit of Transducer)/10

The factory supplied pressure transducer has a high pressure limit of 0.25 in. wg, 1.0 in. wg, or 2 in. wg depending on the size fo the AMD/AMS and the selected maximum calibrated velocity. The value is listed on the transducer and on the labe affixed to the AMD/AMS.

The K & m values are damper specific factory supplied variables that will be printed on a label on the side of the damper:





#### Setup and Operation for AMS and AMD Series With Factory Supplied Controller

- 1. Mount the control box higher than the damper to avoid condensation from running back into the pressure transducer.
- 2. Wire the actuator terminals to the control box terminal strip as shown in figure 1.
  - Wire the actuator power, actuator terminals 1 and 2, to the control box terminals labeled P1 and P2 respectively.
  - Wire the actuator position command, actuator terminal 3, to the control box terminal labeled 3.
- 3. Plumb the air pressure pickups from the damper to the control box as shown in figure 1. Make sure that the air pressure pickup fitting labeled "High" is plumbed back to the control box fitting labeled "High". Likewise, the air pressure pickup fitting labeled "Low" should be plumbed back to the control box fitting labeled "Low Pressure".
- 4. Wire the airflow setpoint command (+) to control box terminal 2 and the airflow setpoint command ground (-) to control box terminal 1. Note: The control signal source must have an impedance of less than 2,000 ohms. The correct flow setpoint signal can be calculated based on the following formula:

<u>0-10VDC</u> C = (10/ Max Cal. Velocity) \* (Q/A)

C= (8/Max Cal. Velocity) \*(Q/A) + 2

<u>4-20mA</u>

C=(16/max Cal. Velocity)\*(Q/A)+4

Where:

Q = Desired Airflow (cfm)

C = Flow Set-point (Vdc or mA)

A = Face Area of the damper ( $ft^2$ )

Example: The building desires 6,000 cfm through a 24"x 24" AMD-42 with 0-10VDC. A=  $(24*24)/144 = 4 \text{ ft}^2$ C=6,000 / (200 \* 4) =7.5 Vdc



# **Optimal Placement for AMS & AMD Damper Series**

# Fans





# **Optimal Placement for AMS & AMD Damper Series**













Transition 5





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Transition 6
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Transition 7





# **Optimal Placement for AMS & AMD Damper Series**



**Branch Takeoff 4** 



# Air Handling Units . . .



## **Damper Maintenance**

Greenheck's dampers are designed to be trouble free and hassle free under normal operation. Dampers are to be installed square and straight so as to prevent binding during operation. The following annual damper maintenance suggestions will help to insure proper damper operation and increase the life expectancy of the damper.

Foreign Matter	Over the course of time, dirt and grime may collect on damper surfaces. The damper surfaces should be cleaned to prevent hindrance to airflow.
Moving Parts	Make sure that parts such as linkage, bearings, blades, etc. that are intended to move freely, can do so. Lubricating these components can prevent possible rusting and unnecessary friction increase. Use only a moli-spray oil or similar graphite based oil as regular lubricating oil will attract dirt.
	<i>Bearings.</i> Synthetic, oil impregnated, and ball bearings (without grease fittings) do not require lubrication. Ball bearings with grease fittings require only minimal grease.
Closure	Remove foreign materials that may be interfering with blade closure or effective sealing of the blades with each other or with the frame.
Operation	While operating the damper through its full cycle, check to see that the blades open and close properly. If there is a problem, check for loose linkage, especially at the actuator. Tighten the linkage where required.

# **Our Commitment**

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Specific Greenheck product warrantees can be located on greenheck.com within the product area tabs and listed in the Library under Warrantees.



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