

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

# Dayton® Volume Control Dampers

## Description

Designed for low leakage HVAC systems or systems requiring modulating airflow. Typically installed inside ductwork of low to medium airflow velocity and static pressure capabilities. Structurally reinforced frame is constructed of 16 gauge galvanized steel, extruded models are aluminum. 3V and Airfoil blades are constructed of 16 gauge fabricated galvanized steel utilizing extruded vinyl seals. Extruded blades are constructed of aluminum utilizing silicone seals. Symmetrical opposed blade configuration allows it to modulate airflow in either direction. Linkage is concealed along frame outside of the airstream. Max air temperature 180°F.

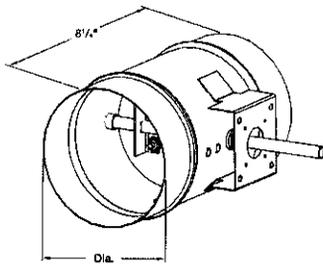


Figure 1 — Round Dimensions

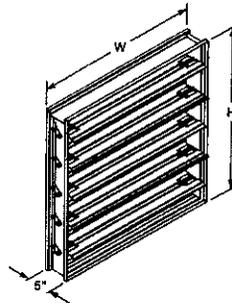


Figure 1 — Square Dimensions

## Optional Accessories

Description	Model No.'s
Damper Actuator:	2LRZ2 & 2LRZ3
Extension Pin Kit:	60M398

## RATINGS

Pressure — 2.5 - 5.0 Static Pressure  
 Velocity — 2,000 - 3,000 fpm  
 Leakage — 10 cfm/ft<sup>2</sup> @ 4" wg / 5 cfm/ft<sup>2</sup> @ 1" wg



Dayton Electric Mfg. Co. certifies that the models 2LRY7 and 2LRZ1 shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program.

## Dimensions and Specifications

Single Blade	3V Blade	Item No.		Frame		Duct		Recommended Actuator	
		Airfoil Blade	Extruded Blade	W	H	W	H	24V	120V
<b>ROUND (See Figure 1)</b>									
3HGN7	—	—	—	5 7/8" Dia.	—	6" Dia.	—	2LRZ2	—
3HGN8	—	—	—	7 7/8" Dia.	—	8" Dia.	—	2LRZ2	—
3HGN9	—	—	—	9 7/8" Dia.	—	10" Dia.	—	2LRZ2	—
3HGP1	—	—	—	11 7/8" Dia.	—	12" Dia.	—	2LRZ2	—
3HGP2	—	—	—	13 7/8" Dia.	—	14" Dia.	—	2LRZ2	—
<b>SQUARE (See Figure 2)</b>									
—	2LRY6	3HGN2	3HGP3	9 3/4"	9 3/4"	10"	10"	2LRZ2	2LRZ3
—	2LRY7	3HGN3	3HGP4	11 3/4"	11 3/4"	12"	12"	2LRZ2	2LRZ3
—	2LRY8	3HGN4	3HGP5	15 3/4"	15 3/4"	16"	16"	2LRZ2	2LRZ3
—	2LRY9	3HGN5	3HGP6	17 3/4"	17 3/4"	18"	18"	2LRZ2	2LRZ3
—	2LRZ1	3HGN6	3HGP7	23 3/4"	23 3/4"	24"	24"	2LRZ2	2LRZ3

## Performance

Size	*AMCA 5.3 Velocity (fpm) / Pressure Drop							
	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000
12 x 12"	0.02	0.09	0.20	0.36	0.56	0.81	1.10	1.44
24 x 24"	0.01	0.04	0.09	0.16	0.25	0.35	0.48	0.63

\*AMCA Figure 5.3 illustrates a fully ducted damper, this is the lowest pressure drop because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

# Dayton® Volume Control Dampers

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## Unpacking

1. Inspect for any damage that may have occurred during transit.
2. Shipping damage claim must be filed with carrier.
3. Check all parts of shipment, including accessories, are accounted for.
4. Dampers must be kept dry and clean. Indoor storage and protection from dirt, dust and weather is highly recommended. Do not store at temperature in excess of 100°F.

## General Safety Information

**⚠ CAUTION** *Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.*

1. Read and follow all instructions and cautionary markings.
2. Check for proper damper locations within the building. Visually inspect the damper for damage.

**⚠ CAUTION** *Verify power requirements before wiring actuator. Manufacture is not responsible for any damage to, or failure of the unit caused by incorrect field wiring.*

**⚠ DANGER** *Electrical input may be needed for this equipment. This work should be performed by a qualified electrician.*

3. 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.

## Installation

**⚠ CAUTION** *Installation, troubleshooting and parts replacement is to be performed only by a qualified personnel.*

**⚠ CAUTION** *Disconnect and lockout power source before installing.*

### DAMPER MOUNTING

**NOTE:** Keep damper and actuator clean, dry and protected from dirt, mortar dust, drywall dust, firesafing materials, wall texture, and paint overspray prior to and after installation.

1. Cut duct or opening so that it is 1/4" larger than the outside dimension of your damper.
2. Lift damper using sleeve or frame. Do not lift damper using blades, linkage, actuators, or jackshafting.
3. Use shims between damper frame and duct opening or opening space to prevent distortion of frame by fasteners holding it in place.

**NOTE:** Dampers are specifically designed and engineered for structural integrity. 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.

4. If damper actuator is to be mounted out of the airstream, determine which blade axle will be driven by the extended control shaft. The extension pin should extend approximately 6 inches beyond the frame. On jackshafted units, the jackshaft should extend through the jackshaft bearing assembly and approximately,

6 inches beyond the frame. (Refer to Extension Pin Kit Mounting after damper is installed.)

5. Mount damper level in the opening, do not twist or bow. Damper must be completely square and free from racking, twisting, or bending. Measure diagonally from upper corners to opposite lower corners of each section.

**NOTE:** Out of square installations can cause excessive leakage and/or torque requirements to exceed damper/actuator design.

**NOTE:** 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.

**⚠ CAUTION** *If wall texturing or spray painting will be performed within 5 feet of the damper sufficiently cover to prevent overspray. Excessive dirt or foreign material deposits on damper can cause excessive leakage and/or torque requirements to exceed damper/actuator design.*

### EXTENSION PIN KIT MOUNTING

**⚠ WARNING** *Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.*

1. Locate position for Extension Pin Kit.

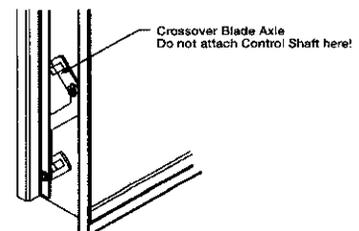


Figure 2 — Crossover Blade Axle

# Models 2LRY6 thru 2LRY9, 2LRZ1, 3HGN2 thru 3HGN9, and 3HGP1 thru 3HGP7

## Installation (Continued)

**NOTE:** Always attach extended control shaft to a blade axle which is directly connected to the main linkage tie bar. Do not attach to a crossover blade. Refer to Figure 2.

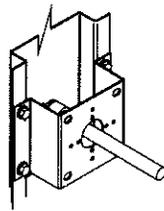
**NOTE:** For a damper not installed in a duct, refer to Figure 3 for proper control shaft location. After mounting control shaft onto the proper drive blade axle, skip to step 5.

Number of Damper Blades	Control Shaft Location
1 or 2	1st blade from bottom
3 or More	3rd blade from bottom

**Figure 3 — Control Shaft Location**

- Cut hole, approximately 1 in. diameter in duct where damper drive blade axle will be located, providing clearance for enlarged portion of extended control shaft.
- Once damper is installed in the duct, push extended control shaft through the hole in duct and onto the drive blade axle. Retainer clip should "click" into the groove on the drive blade axle and hold shaft in place.
- Install stand off bracket with bearing over the extended control shaft and

fasten bracket to damper frame using (4) #14 Tek screws (by others). Make sure screws do not interfere with damper linkage or blade movement. Refer to Figure 4.



**Figure 4 — Stand Off Bracket Position**

**CAUTION** Stand off bracket is needed to support the extended control shaft. If not installed properly, the extended control shaft may not operate damper correctly.

- Inspect the damper blades and shaft to determine the proper damper shaft rotation for the desired blade fail position.

## Operation

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

## Maintenance

**CAUTION** Disconnect and lockout power source before servicing.

**NOTE:** Dampers are designed to be trouble free and hassle free under normal operation. A proper maintenance program should be established.

- Dirt and grime may collect on damper surfaces, and should be cleaned to prevent hindrance to airflow.
- Check that parts can move freely (linkage, bearings, blades, etc.). 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.
- Keep clean from obstructions. Remove foreign materials that may be interfering with blade closure or effective sealing of the blades with each other or with the frame.
- Check that blades open and close properly while operating the damper through its full cycle. Check for loose linkage, especially at the actuator. Tighten the linkage where required.

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## Trouble Shooting Chart

Symptom	Possible Cause(s)	Corrective Action
Damper does not fully open and/or fully close	1. Frame is "racked" causing blades to bind on jamb seals	1. Adjust frame such that it is square and level
	2. Actuator linkage loose	2. Close damper, disconnect power, adjust and tighten linkage
	3. Defective motor	3. Replace
	4. Screws in damper linkage	4. Locate screws and remove
	5. Actuator linkage hitting wall or floor	5. Damper installed too far into wall. Move out to line designated on damper label
	6. Contaminants on damper	6. Clean with a non oil-based solvent (see Maintenance)

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