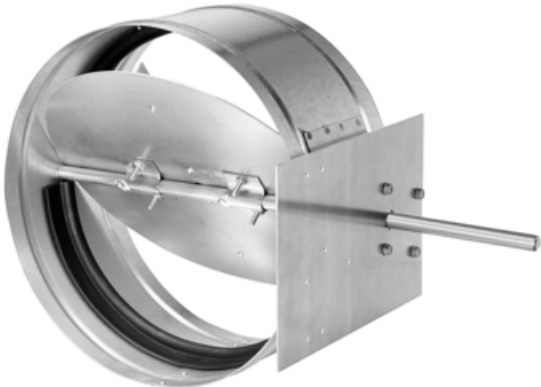


RD-2000 Round Control Dampers

Product Bulletin

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Johnson Controls provides top-quality, low-leakage RD-2000 Round Control Dampers for use in Heating, Ventilating, and Air Conditioning (HVAC) systems that fit your size and application requirements. Round dampers are available with seals for low-leakage control dampers and are easily installed in round ducts. Round dampers are available with or without a factory-installed actuator.



**Figure 1: RD-2000 Damper
(Shown with Option B)**

Table 1: Features and Benefits

Features	Benefits
Formed Shroud	Inserts easily into round ductwork.
Available Factory-Installed Actuator	Reduces installation time.
One-Piece Construction	Increases rigidity and strength.

Sample Specifications

Furnish and install round control dampers manufactured by Johnson Controls.

Damper shrouds are to be constructed of formed 20-gauge galvanized steel, mechanically joined. Blade rotation shall not exceed 80 degrees.

Damper blades are to be constructed with 1-piece or 2-piece 16-gauge or 20-gauge galvanized steel, determined by size.

Damper performance shall be designed for tight shutoff. Leakage rating at 4 in. Water Gauge (w.g.) differential pressure with 5 lb-in./sq ft closing torque shall not exceed 10 cfm per square foot. Dampers without actuators must be rated to operate over a temperature range of -20 to 200°F (-29 to 93°C).

Damper sizing shall be by the designer in accordance with accepted industry practices to ensure proper system performance.

Factory-installed electric and pneumatic actuators are available.

Construction

All dimensions are the same for the 20-gauge (1 mm) galvanized, 6063-T5 aluminum (Class I only) and 304 stainless steel products.

The shroud is made of 6-inch (152 mm) long, 20-gauge (1 mm) material.

Blades are made of single-piece 16-gauge or two layers of 14-gauge material matching the shroud.

Blade arm is 1/2 in. (13 mm) diameter material matching the shroud. The length of the blade arm is the full width of the diameter of the damper with an additional 6 in (152 mm) extending beyond the shroud.

Balancing dampers have no seals. Class II leakage control dampers have an Ethylene Propylene Diene M-class (EPDM) rubber seal adhered to the shroud. Class I leakage dampers have an EPDM seal sandwiched between the two sides of the blades. The seal fully encompasses the blade edge.

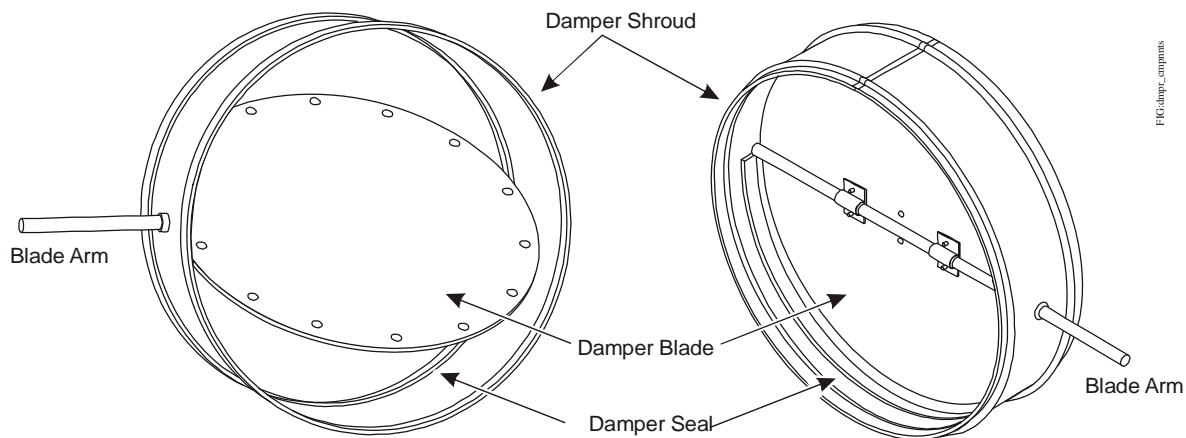


Figure 2: Damper Components

Dimensions

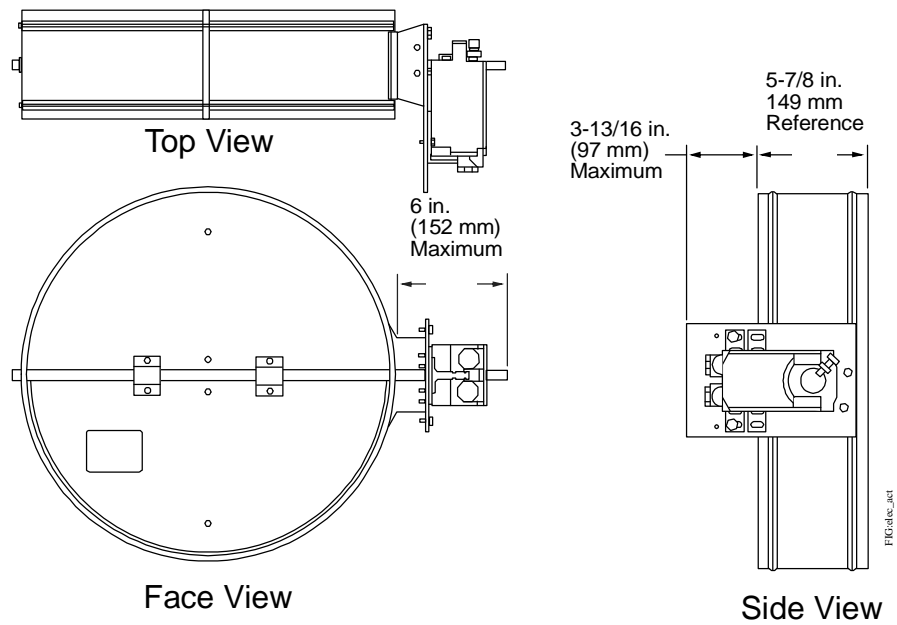


Figure 3: Damper with Electric Actuator Dimensions, in. (mm)

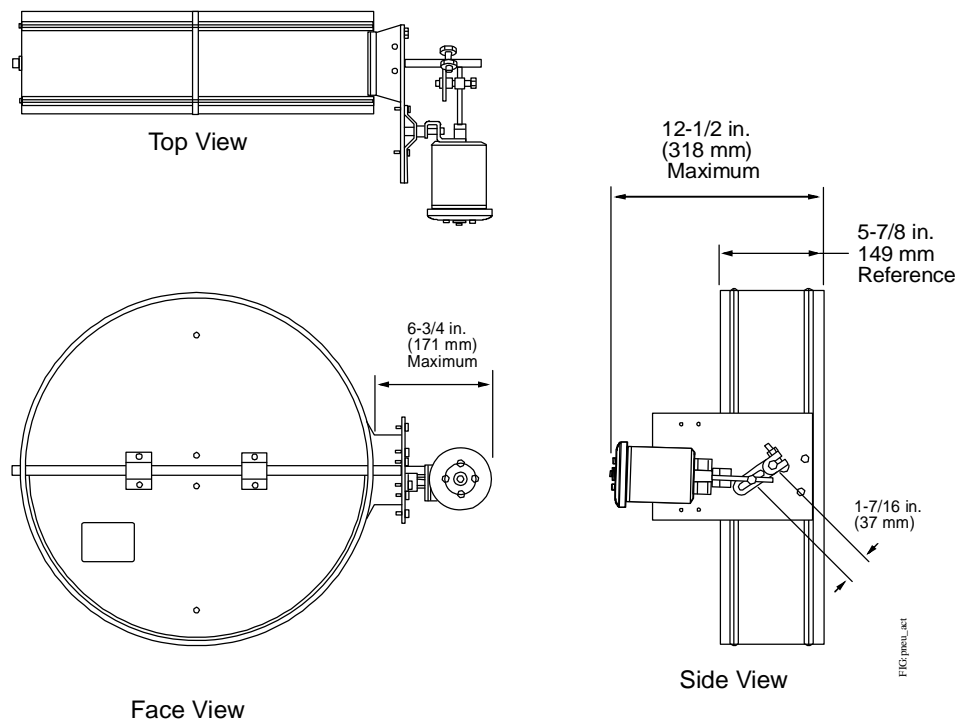


Figure 4: Damper with Pneumatic Actuator Dimensions, in. (mm)

Table 2: Approximate Weight, lb (kg)

Damper Diameter	Without Actuator	With M9106 Actuator	With M9206 Actuator	With M9210 or M9220 Actuator	With D-3062 Actuator
4 in.	1.1 (0.5)	3.5 (1.6)	7.5 (3.4)	8.7 (3.3)	3.5 (1.6)
8 in.	2.9 (1.3)	5.3 (2.4)	9.3 (4.2)	10.5 (4.1)	5.5 (2.5)
12 in.	8.0 (3.6)	10.4 (4.7)	14.4 (6.5)	15.6 (6.4)	10.5 (4.8)
16 in.	14.0 (6.3)	16.4 (7.4)	20.4 (9.2)	21.6 (9.1)	16.5 (7.5)
20 in.	22.5 (10.2)	24.9 (11.3)	28.9 (13.1)	30.1 (13.0)	25.0 (11.3)
22 in.	26.5 (12.0)	28.9 (13.1)	32.9 (14.9)	34.1 (14.8)	29.0 (13.2)

Selection Information

Not all combinations are available, check the selector tool software application for valid combinations.

Table 3: Damper Selector

	Code Number	R	C	G	d	d			N
Product Family	R = Round dampers								
Application	B = Balancing (no seals) C = Control (Class II) L = Low Leakage Control (Class I)								
Shroud Type	A = Aluminum (Class I only) G = Galvanized steel S = Stainless steel (304)								
Diameter	4 to 24 in., 1 in. increments								
Actuator¹	B = Bracket with no actuator E = Electric non-spring return M = Manual locking quadrant N = None P = Pneumatic, D-3062 S = Spring return electric								
Control Signal	B = Floating with two Single-Pole Double-Throw (SPDT) auxiliary switches E = Proportional with two SPDT auxiliary switches R = 8-13 lb spring range								
Operation	NC = Normally Closed NO = Normally Open								

1. Based on torque requirements, RCG construction dampers use M9106 or M9206 actuators on all sizes, and RLG construction dampers use M9210 and M9220 actuators on all sizes.

Pressure Drop

To determine static pressure drop through an open damper, enter the Damper Pressure Drop chart (Figure 5) on the left side.

Given the CFM airflow through the damper, follow that CFM line to the diagonal line for the damper size required, then down to the static pressure drop of that damper size.

For example, the pressure drop of an 8-inch diameter damper with 700 CFM airflow is 0.06 inches w.g.

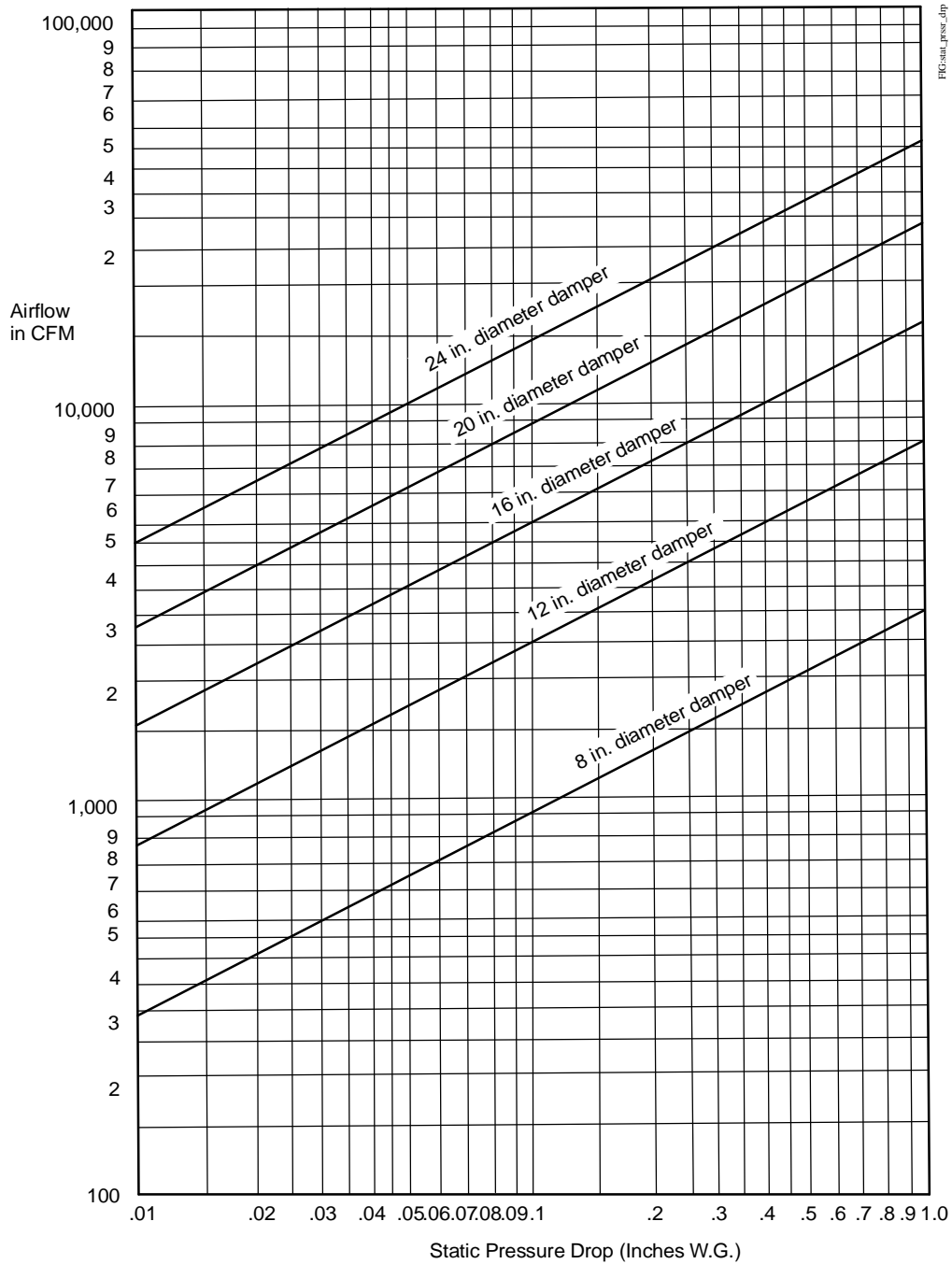


Figure 5: Damper Pressure Drop

Repair Information

If the RD-2000 Round Control Damper fails to operate within its specifications, replace the unit. For a replacement RD-2000 Damper, contact the nearest Johnson Controls® representative.

Technical Specifications

RD-2000 Round Control Dampers¹

		RCG Construction	RLA, RLG, and RLS Construction
Leakage per in. diameter	1 in. static pressure	.41	.079
	2 in. static pressure	.55	.12
	4 in. static pressure	.82	.15
Pressure Drop (in. w.g. at 1,000 fpm)	8 in. diameter damper	.12	
	12 in. diameter damper	.012	
	16 in. diameter damper	.001	
	20 in. diameter damper	.001	
Actuator Torque Required for Closing at 1,500 fpm Velocity	4 to 8 in. diameter damper	52 lb-in maximum	
	9 to 16 in. diameter damper	84 lb-in maximum	
	17 to 22 in. diameter damper	116 lb-in maximum	
Leakage	Class I	RLG Construction	
	Class II	RCG Construction	
	Not Rated	RBG Construction	
Electric Actuator	M9106 and M9206: Running and breakaway torque 53 lb-in (6 N-m) M9116 and M9220: Running and breakaway torque 140 lb-in (16 N-m)		
Pneumatic Actuator	Maximum control pressure: 25 psig (172 kPa)		
Temperature Limits	without actuator	-20 to 200°F (-29 to 93°C)	
	with electric actuator	35 to 125°F (2 to 52°C)	
	with pneumatic actuator	-20 to 150°F (-29 to 66°C)	

1. Dampers are tested using instrumentation and procedures in accordance with AMCA Standard No. 500, Test Methods for Louvers, Dampers, and Shutters.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



Building Efficiency

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