

# RI-1000 10-Gauge Round Industrial Damper

## Product Bulletin

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Since 1905, Johnson Controls has developed and refined air control products by providing the highest quality control dampers that fit your application and size requirements. Now we are including round industrial-style dampers in our product offering.

RI-1000 dampers are available in sizes up to 72 in. (182 cm) diameter with galvanized steel or 304 stainless steel frames with no seals, neoprene seals, or silicone seals.

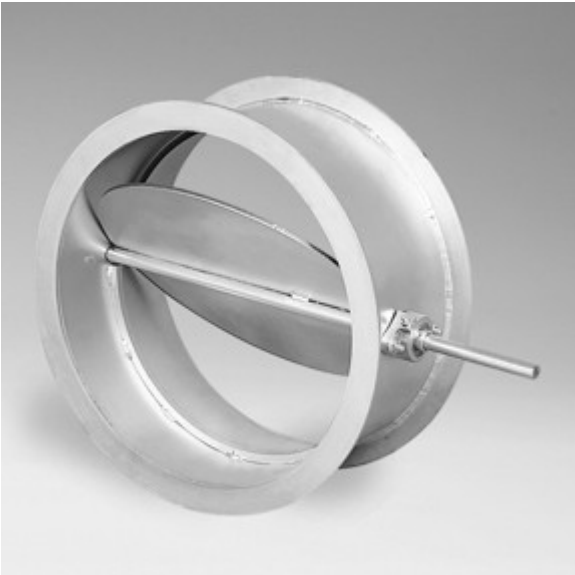


Figure 1: RI-1000 10-Gauge Round Industrial Damper

Table 1: Features and Benefits

Features	Benefits
3-Year Warranty on Materials and Workmanship	Provides confidence in company-backed product.
15 to 25 Working-Day Standard Shipping after Order Entry	Results in fast response for short lead time projects.

## Applications

RI-1000 dampers are heavy duty control dampers that offer accurate control within round ductwork with pressure differentials of 13 inches (33 cm) or more. The solid steel construction and an all-welded frame effectively perform under the most demanding conditions found in industrial Heating, Ventilating, and Air Conditioning (HVAC) or process systems. These dampers are available with blade seals for low leakage applications.

## Sample Specification

Furnish and install, at locations shown on plans or in accordance with schedules, heavy duty industrial grade control dampers meeting the following specifications.

Dampers shall be butterfly type consisting of circular blade, mounted to axle within formed flanged frame.

Frames shall be constructed of steel channel and shall have full circumference blade stop located in air stream.

Damper shaft shall be continuous, solid cold rolled steel extending through entire diameter of damper and beyond damper bearing a minimum of 6 inches (152 mm).

Axle shall be supported in sealed, relubricable ball bearings mounted to damper frame. Press fit bearings are not acceptable.

Damper frame and blade shall be fabricated from hot rolled steel.

All parts not otherwise protected shall be given one coat of aluminum paint. Damper leakage shall not exceed (specifier select) 35 total cfm (16.5 lps) with blade seals (or) 175 total cfm (82.6 lps) with full circumference blade stop based on 48 in. (1,219 mm) diameter unit at 1 in. w.g. (.25 kPa).

Maximum pressure drop across a 48 in. (1,219 mm) diameter damper shall be less than .01 in. w.g. at 10,000 cubic feet per minute (cfm) or .002 kPa at 4,719 liters per second (lps).

Submittal shall include published performance data on a complete range of damper sizes developed from testing in accordance with AMCA Standard 500 in an AMCA registered laboratory.

## Construction and Dimensions

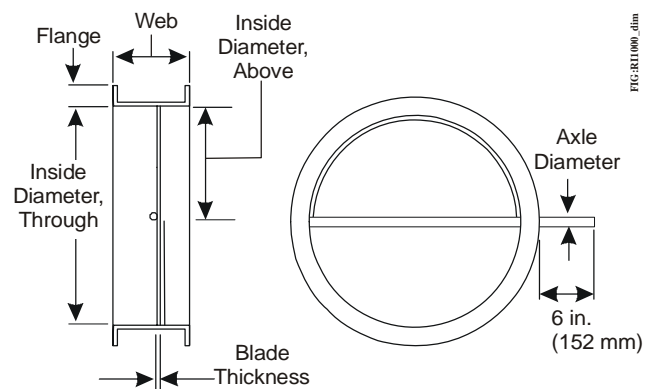
See Table 2 for information on damper construction.

**Table 2: Construction**

Part	Materials
<b>Frame</b>	Steel channel
<b>Blade</b>	Steel, stiffened as required
<b>Axle</b>	Continuous, plated steel axle; angle reinforced as required.
<b>Control Shaft</b>	Axle extends 6 in. (152 mm) beyond frame.
<b>Bearings</b>	Grease lubricated ball bearings bolted to frame.
<b>Blade Stop</b>	1/2 x 1/4 in. (13 x 6 mm) steel bar on dampers under 17 in. (432 mm) in diameter. 1/2 x 1/2 in. (13 x 13 mm) steel bar on dampers 17 in. (432 mm) in diameter and larger.
<b>Finish</b>	Aluminum paint with some parts mill galvanized.
<b>Minimum Size</b>	4 in. (102 mm) diameter
<b>Maximum Size</b>	72 in. (1,829 mm) diameter
<b>Shipping Weight</b>	2.25 pounds per inch of circumference (1.02 kg per 2.54 cm of circumference)
<b>Maximum Temperature</b>	250°F (121°C) <sup>1</sup>

- Dampers can be constructed for 250 to 400°F (121 to 204°C) temperature conditions by increasing clearance between blade and frame and by using a different bearing arrangement. Advise Johnson Controls of desired maximum operating temperature.

See Figure 2 and Table 3 for information on dimensions.



**Figure 2: Dimensions**

**Table 3: Dimensions**

Inside Diameter		Frame		Blade Thickness	Axle Diameter
Above	Through	Flange	Web		
4 in (102 mm)	8-3/4 in (222 mm)	1-1/4 in. x 10 ga. (3.2 cm x 3.2 mm)	6 in. x 10 ga. (15 cm x 3.2 mm)	1/4 in. (6 mm)	1/2 in. (13 mm)
8-3/4 in (222 mm)	11-3/4 in. (299 mm)	1-1/4 in. x 10 ga. (3.2 cm x 3.2 mm)	9 in. x 10 ga. ( 22.9 cm x 3.2 mm)	1/4 in. (6 mm)	3/4 in. (19 mm)
11-3/4 in. (299 mm)	14 in. (356 mm)	1-1/2 in. x 10 ga. (3.8 cm x 3.2 mm)	9 in. x 10 ga. ( 22.9 cm x 3.2 mm)	1/4 in. (6 mm)	3/4 in. (19 mm)
14 in. (356 mm)	24 in. (610 mm)	1-1/2 x 1/4 in. (3.8 x 0.64 cm)	9 in. x 10 ga. ( 22.9 cm x 3.2 mm)	1/4 in. (6 mm)	3/4 in. (19 mm)
24 in. (610 mm)	32 in. (813 mm)	2 x 1/4 in. (5 x 0.64 cm)	9 x 1/4 in. (22.9 x 0.64 cm)	1/4 in. (6 mm)	3/4 in. (19 mm)
32 in. (813 mm)	44 in. (1,118 mm)	2 x 1/4 in. (5 x 0.64 cm)	9 x 1/4 in. (22.9 x 0.64 cm)	1/4 in. (6 mm)	1 in. (25 mm)
44 in. (1,118 mm)	48 in. (1,219 mm)	2 x 1/4 in. (5 x 0.64 cm)	9 x 1/4 in. (22.9 x 0.64 cm)	1/4 in. (6 mm)	1-1/2 in. (38 mm)
48 in. (1,219 mm)	52 in. (1,321 mm)	2-1/2 x 5/16 in. (6.4 x 0.79 cm)	9 x 1/4 in. (22.9 x 0.64 cm)	1/4 in. (6 mm)	1-1/2 in. (38 mm)
52 in. (1,321 mm)	72 in. (1,829 mm)	2-1/2 in. x 5/16 in. (6.4 x 0.79 cm)	9 x 1/4 in. (22.9 x 0.64 cm)	3/8 in. (10 mm)	2 in. (51 mm)

**Ordering Information**

Use Table 4 to construct the part number for the desired model.

**Table 4: RI-1000 Dampers**

	Code Number / Character	FIELD					
		1	2	3	4	5	6
<b>Product Family</b>	R = Round Dampers	R	I	G	d	d	X
<b>Application</b>	I = Industrial						
<b>Shroud/Seal</b>	B = Galvanized/No Seals N = Galvanized/Neoprene Seals G = Galvanized/Silicone Seals S = 304 Stainless Steel/Silicone Seals						
<b>dd = Diameter</b>	04 in. through 72 in. in increments of 1 in.						
<b>Actuator</b>	M = Manual Locking Quadrant N = None						

## Performance Data

### Leakage

To determine leakage at static pressure differentials higher than 1 inch water gage, multiply leakage at 1 inch (determined from Table 5) by correction factor for higher static pressure (determined from Table 6).

Leakage ratings are based on AMCA Standard 500 using Test Setup Apparatus Figure 5.5. Torque applied holding damper closed at 10 in. lb per sq ft (0.1216 kPa) of damper with minimum of 20 in. lb (2.26 N·m).

Dampers may tolerate higher pressures and velocities than those listed here. Conservative ratings are presented intentionally in an effort to avoid misapplication. Consult Johnson Controls when damper is to be applied in conditions exceeding recommended maximums.

**Table 5: Damper Leakage**

Damper Width	Maximum System Pressure, in. w.g. (kPa)	Maximum System Velocity	Leakage with Seals <sup>1</sup>		Leakage without Seals <sup>1</sup>	
			% of Maximum Flow	Total cfm (Ips)	% of Maximum Flow	Total cfm (Ips)
72 in. (1,829 mm)	13.0 (3.25)	6,000 feet per minute (30.48 meters per second)	0.035	60 (28)	0.162	275 (130)
60 in. (1,524 mm)	13.0 (3.25)		0.038	45 (21)	0.191	225 (106)
48 in. (1,219 mm)	13.0 (3.25)		0.046	35 (16.5)	0.232	175 (82.5)
36 in. (914 mm)	14.0 (3.50)		0.066	28 (13)	0.294	125 (59)
24 in. (610 mm)	15.0 (3.75)		0.132	25 (11.7)	0.451	85 (40)
12 in. (305 mm)	17.0 (4.25)		0.318	15 (7)	1.060	50 (23.6)

1. Leakage information based on pressure differential of 1 in. w.g. (0.25 kPa).

**Table 6: Correction Factor (Part 1 of 2)**

Static Pressure, in. w.g. (kPa)	Correction Factor
1 (.25)	1.0
2 (.50)	1.4
3 (.75)	1.7
4 (1.0)	2.0
5 (1.25)	2.2
6 (1.5)	2.4
7 (1.75)	2.6
8 (2.0)	2.8
9 (2.25)	3.0
10 (2.50)	3.2
11 (2.75)	3.3

**Table 6: Correction Factor (Part 2 of 2)**

Static Pressure, in. w.g. (kPa)	Correction Factor
12 (3.0)	3.5
13 (3.25)	3.6
14 (3.50)	3.7
15 (3.75)	3.9
16 (4.0)	4.0
17 (4.25)	4.1

### Performance Curves

Performance curves are based on AMCA Standard 500 using test setup apparatus figure 5.3 (damper installed with duct upstream and downstream). Static pressure and cfm (Ips) are corrected to .075 lb/cubic ft (1.2 kg/cubic meter) air density.

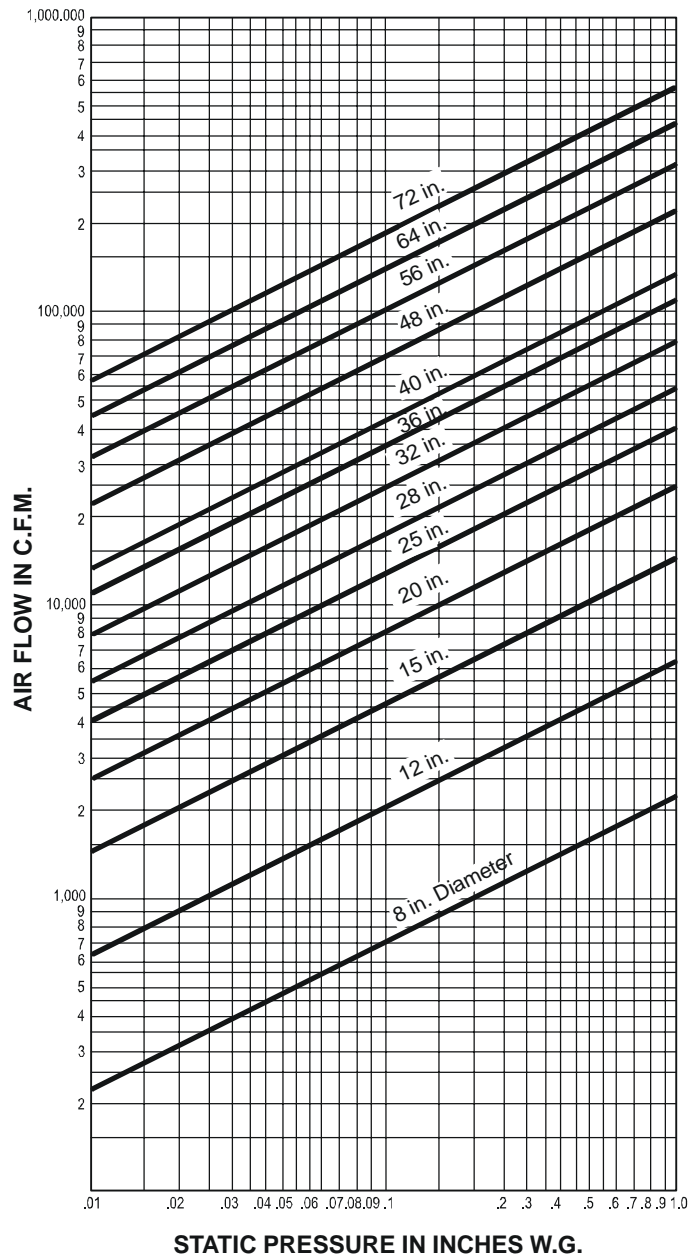


FIG: dampr\_press\_drop

**Figure 3: Damper Pressure Drop**

**Agency Compliance**

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



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