

# Dampers

*Dampers from Forney utilize Damper Designs™ field proven designs for controlling air flow.*

## Product Overview

Forney supplies a complete line of high quality dampers to utility and heavy industrial customers. Forney dampers utilize Damper Designs™ field proven designs into a unique engineered solution to meet your plants specific needs. Proper functioning dampers are vital to the operation of your plant, so we put our design emphasis on areas critical to the effectiveness and life of the damper.

Several factors need to be taken into account when determining the best type of damper for your application.

- Will the damper be used to shut off or control flow?
- What is the leakage requirement?
- Maximum operating pressure
  - Upset pressure
  - Maximum operating temperature
  - Upset Temperature
- Corrosive Environments
  - Erosive gas properties
  - Duct deposits
  - Cycle times
  - Actuator type

All this information is required in order to offer the best type of damper for your application. These items combine to make the difference between an adequate damper and one that is truly reliable, durable and economical to maintain.

## Damper Types

### BIPLANE™ DAMPERS

- The double wall air sealed BiPlane™ louver damper has no equal where total isolation by a louver style damper is required.

### LOUVER DAMPERS

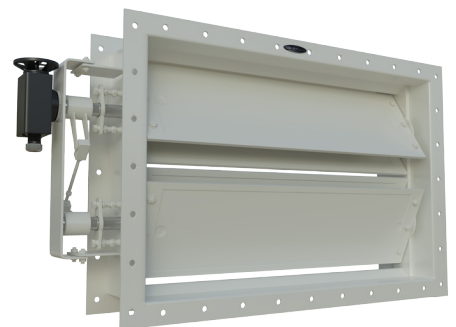
- Louver dampers are best applied to balance or control flow.

### GUILLOTINE DAMPERS

- Guillotine dampers are used for isolation service in round or rectangular ducts. The dampers function is to shut off, not control, flow.

### ROUND DAMPERS

- Forney offers a wide variety of round dampers, including zero leak O-ring dampers, round dampers with abrasion resistant replaceable seats, round BiPlane dampers and a complete size range of round dampers for bag house and similar installations.



# Forney Dampers

## Guillotine Dampers

Guillotine dampers are used for isolation in round or rectangular ducts. The dampers function is simply to shut off, not control, flow. The amount of allowable leakage determines the seal design. Rigid seats provide adequate closure, with leakage in the range of 0.4 to 1% of flow. When zero leakage of flue gas is required, a seal air system must be added. Flexible seals reduce air requirements.

### SINGLE BLADE

The simplest form of guillotine damper is the single blade. The one piece blade provides verifiable closure of the duct with minimal leakage at the blade edges. Seals are used to control leakage where the blade enters the duct section. These seals can be air sealed to contain gases in a positive pressure duct. Leak paths are typically less than 0.1% of duct area with resulting flow leakage of 0.4 to 1.1%. The blade guides insure smooth operation and are self cleaning in deposit producing environments.

### DOUBLE BLADE

The double blade guillotine supplies a secondary man-safe feature in addition to zero leakage. The seal air and dual blades provide a thermal barrier; heat and gas are kept out of the isolated chamber. Leakage control is similar to the basic single blade type. Self cleaning, rigid seats in the duct require minimal maintenance or inspection. Seals are used at the blade entry only.

### MATERIAL SELECTION

Many guillotine dampers in the closed position will cause condensation to occur, due to elevated temperatures on one side and cool or cold temperatures on the other side of the blade. The water or liquid can be highly acidic and cause damage to the damper and surrounding ductwork. Understanding the pH concentration and selecting the proper material for the application is critical for the life and reliability of the equipment. We offer a wide range of material from A36 carbon steel to Hastelloy C-276 to abrasion resistant alloy.

## Biplane™ Dampers

- The BiPlane™ louver provides superior function whether the service requires control or isolation.
- The BiPlane is the most reliable closure of any louver.
- The BiPlane has less non-air sealed leakage than any conventional louver.
- The BiPlane seats are not affected by dust and deposits in the duct.
- When open, the BiPlane has the lowest pressure drop on any style louver.
- The air sealed BiPlane needs about half the actuating torque of a double louver.
- The BiPlane has the most rigid louver blade structure.
- The air sealed BiPlane needs less duct space than a double louver.
- The BiPlane structure is thermally elastic to allow unrestricted use where operating temperatures are variable.
- The BiPlane's simple construction is cost effective.

## Louver Dampers

Forney louver dampers are full welded equipment designed for long service, low maintenance, and easy repair.

Louver dampers are best applied to balance or control flow. The normal leak path of 0.7% of duct area produces a three to five percent leak rate in average applications.

A damper should normally be used in the middle third of the control range for best results. This gives equal percentage in either direction should the need arise. Forney can advise you the way your control requirements can be met.

Leakage performance of a louver depends on ratio of flowing to shutoff pressure, design temperature, number of blades, and blade edge treatment. Since the first two are system related, the last two are the usual areas of improvement. Reduction of number of blades reduces leak path to the limit that a single blade has only perimeter leakage.

Several options constructed from various materials are available:

- Metallic spring seals,
- Sealed (dust tight) blade ends, and
- Shear seals.

This custom equipment is designed specifically to fit your application.

A wide variety of damper operators can be specified - electric, pneumatic, hydraulic or manual - you choose the one best suited for your particular application.

## Round Dampers

Forney offers a variety of round dampers, including ones with abrasion resistant replaceable seats.

### ZERO LEAK O-RING DAMPER

Provide excellent "on-off" and / or balancing service, and low cost flow control of dirty flue gases at a variety of temperatures below 450°F (232°C).

**ROUND BIPLANE DAMPERS** offering control and "on-off" capabilities.

Forney offers a complete size range of round dampers for bag house and similar installations.

**POPPET DAMPERS** are used in the baghouse and manufactured in carbon or stainless steel, with low leak or zero leak configurations. Poppets are available with full cycle or segmented control.