

# **DETROIT<sup>®</sup> AIR SWEEP DISTRIBUTOR SPOUTS FOR BIOMASS AND REFUSE FUELS**



Providing solutions that enable industry to meet today's energy and environmental requirements.



# Detroit® Air Swept Distributor Spouts

## For Biomass and Refuse Fuels

Recycling and reduction of our world's waste stream is not only environmentally necessary, it also makes good business sense. Many industrial processes produce solid wastes of high calorific value, ideally suited for energy recovery. Energy produced by burning waste products is recycling in its finest degree. Waste products such as bark, wood waste, shavings and sawdust, bagasse, grain hulls, coffee refuse, RDF, tire chips and others are excellent fuel choices. Such fuels are burned independently or in conjunction with other fuels, thereby offering cost effective options for meeting energy requirements and eliminating costly refuse disposal.

## How the Distributors Work

Detroit Air Swept Distributors are used to distribute refuse onto the grate surface. The fuel distribution system introduces the fuel to the furnace by a blanket of high pressure air sweeping the floor of the spout and spreading the fuel evenly on the grates, both side to side and front to rear. The number and size of distributors required to assure uniform fuel distribution is based on total grate width, length and fuel capacity.

When the refuse fuel is properly metered and continuously fed to the stoker distributing spouts, it is uniformly distributed into the combustion chamber by a source of varying air flow through the spouts.

The air supply has a rotating damper which cycles the air pressure and volume of air feeding the fuel to the furnace so that longitudinal distribution is achieved.

Fine particles of fuel entering the furnace are burned rapidly in suspension. Coarser, heavier particles of fuel are spread evenly on the grates forming a thin, fast burning fuel bed. The combination of suspension and thin fuel bed burning makes the stoker and boiler highly responsive to load variations.

## Benefits

### Erosion / Temperature / Impact Resistant

The distributors are fabricated with a variety of materials that provide the best heat, erosion and impact resistance. Stainless steel side plates, cast iron upper center plates, hard alloy bottom plates and removable chromium carbide distribution plates retard erosion caused by inconsistent fuel quality and a certain amount of abrasive material entrained in the fuel. Total stainless steel construction is available for extremely high temperature applications.

### Simplicity of Design

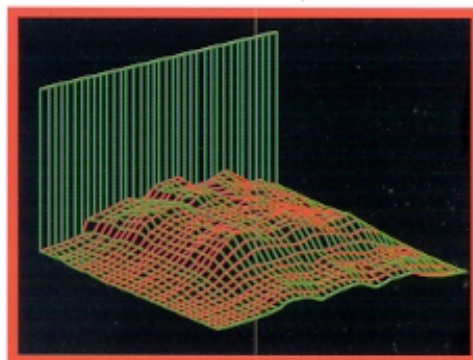
One very distinct advantage of the air swept spout over a mechanical feeder is its simplicity. There are no moving parts in contact with the fuel. Tramp materials have the potential to damage a mechanical feeder, whereas, in the distributor spout materials are propelled into the furnace.

### Factory Assembled

The air swept distributors are shipped completely assembled and are available in nominal widths of 12, 18, 24, 30, and 36 inches.

## Performance Tested

Detroit's distributor designs have received extensive shop testing and are field proven on most fuels and furnace configurations to ensure optimum fuel distribution for superior combustion efficiency.



## Adjustable Distributor Plate

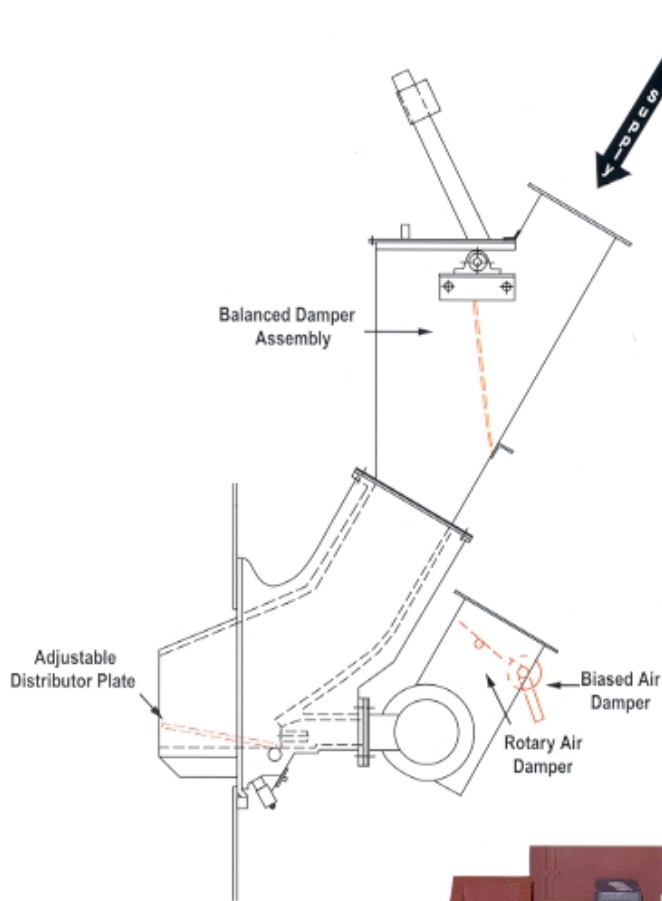
The fuel is directed by the position of an adjustable plate. It can be rotated from the horizontal position up to a 10 degree incline to project fuel to the rear of the stoker. The distribution plate can be adjusted while the boiler is on-line. The removable plate is fabricated with a wear resistant chromium carbide overlay for life extension.



### Balanced Damper Assembly

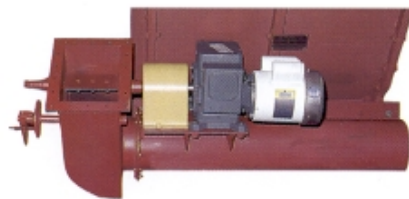
The inlet of each air swept distributor spout is equipped with a balanced damper assembly which contains a counter-weighted damper that:

- (a) reduces the velocity of refuse entering the spout,
- (b) distributes the flow of refuse across the width of each spout,
- (c) minimizes fire from flashing back up through the spout during furnace upsets and
- (d) minimizes infiltration of air into the furnace when no refuse is being burned.



### Motorized Rotary and Biased Air Dampers

These dampers control the air to each air swept spout by alternately increasing and decreasing both quantity and pressure of the air in several cycles per minute assuring even fuel distribution within the furnace. The action of these dampers varies the trajectory and spread of the fuel front to rear. High air flow distributes the fuel to the rear and low air flow distributes the fuel to the front.



## **Detroit Stoker:** A complete line of combustion equipment.

While Stoker is our middle name, it describes just a part of our comprehensive line of equipment for the steam and power industries. Our expertise includes applications in nearly every type of boiler and furnace configuration. Why not put this extensive experience to work on your combustion challenges? Additional information is available on the following product lines:

- Stokers for combustion of all fuel types
- Metering feeders for biomass and refuse
- Sand/char classifiers
- Rotary seal feeders
- Ash and sludge conditioners — rotary and twin-paddle type
- Combination feeders for coal, biomass and refuse
- Low NOx gaseous and liquid fuel burners for auxiliary and full load firing
- Feeder rebuild program
- Construction services
- Furnace access doors
- Overfire air systems for staged combustion
- Carbon reinjection systems
- Fly ash receiving/separator equipment



**Detroit  
Stoker  
Company**

Subsidiary of United Industrial Corporation

1510 East First Street, PO Box 732

Monroe, Michigan 48161

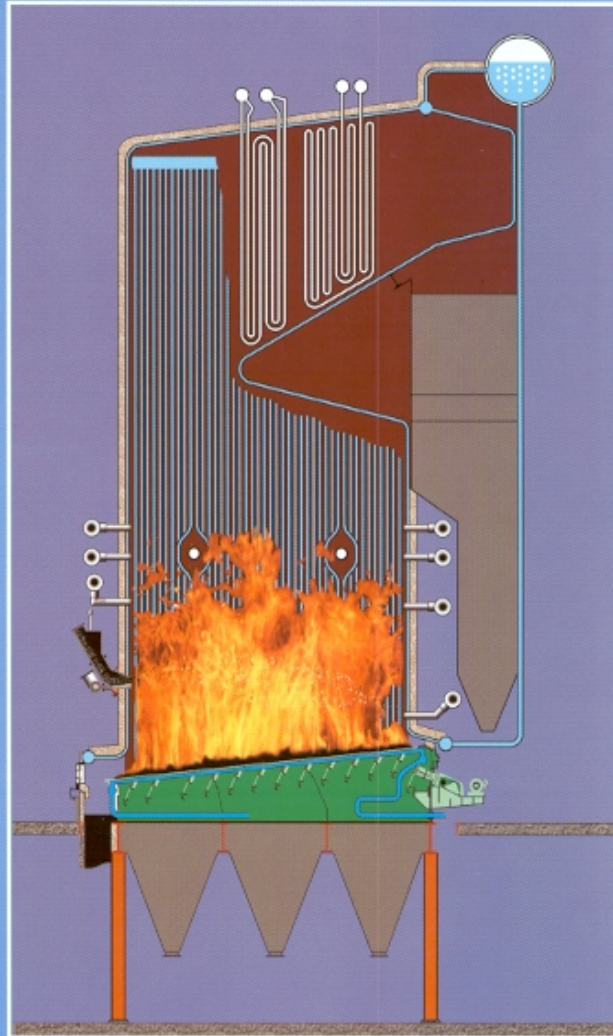
Phone: 734-241-9500 • Fax: 734-241-7126

Toll-free: 1-800-786-5374 (1-800-STOKER4)

Visit our web site: [WWW.DETROITSTOKER.COM](http://WWW.DETROITSTOKER.COM)

E MAIL: [SALES@DETROITSTOKER.COM](mailto:SALES@DETROITSTOKER.COM)

*This illustration shows a steam generator fired by a Detroit Hydrograte® Stoker. The adjustable pneumatic distributors are designed to evenly spread fuel over the grate for good combustion and emissions control. A portion of the refuse is burned in suspension. The remainder is burned on a thin, fast-burning bed on the grate. Alternate or auxiliary fuels can readily be burned in the furnace above the grates.*



APR-15-02