

# FLUIMATIC SYSTEM

## Overview

### Application

The Fluimatic system is a dual pump and Voluvalve oil metering system that has proved effective in thousands of Preferred type BHE rotary burners the world over. This outstanding pumping-metering system is now available for:

- Other Rotary Burners
- Burners of other Designs

### Benefits

The Fluimatic system not only meters the oil regardless of physical changes, but also ensures dependable burner start even when insufficient oil supply would cause failure at start-up.

Eliminating variations in oil delivery from changes in oil viscosities and pressure, eliminates smoke and reduces air pollution caused by improper oil burning. In addition, average boiler efficiencies are greatly increased, and the yearly cost of cleaning boilers is greatly reduced.

### Fluimatic Description of Precision Oil Metering

Preferred's solution to the problem of uniform oil flow at different viscosities is embodied in the famous Voluvalve and equalizing value, integrated into one heated oil reservoir.

This combination is the heart of the Fluimatic system. As shown in the diagram, oil passes through ports to the burner atomizer or back to the secondary pump's reservoir. The floating plunger in the equalizing chamber overlaps one of the ports when the other is open. This balancing of pressure of both ports causes the oil pressure at the downstream end of the two sets of tubular passages in the Voluvalve to be continuously equal.

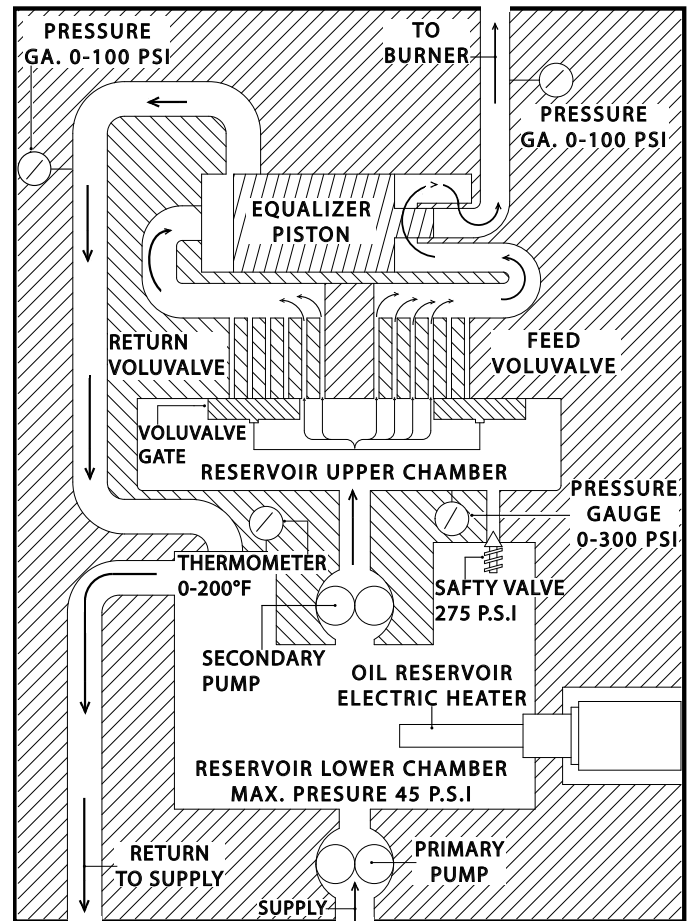
The constant quantity of the oil delivered to the Voluvalve is divided between its flow to the burner, and back to the secondary pumps reservoir in exact proportion to the number of tubular passages opened to the two paths of flow regardless of the oil's viscosity or the pressure required to overcome the resistance

### Voluvalve Comparison with Standard V-Ported metering Valve

In the graph on the right, a clear comparison shows the accuracy of the metered oil flow rate from a Voluvalve and from a standard "V"-ported metering valve, under identical test conditions. Note, the constant oil flow through the Voluvalve over the entire temperature range against the great changes through the "V"- ported valve.

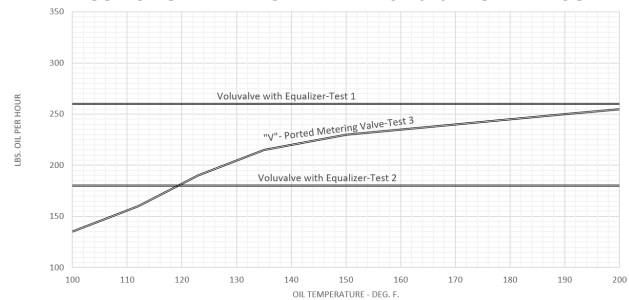


Fluimatic System with Actuator attached



Internal Mechanism of Fluimatic Diagram

Metering Test #6 oil-186 SSF AT 122°F  
WT.-8.125 LBS PER GAL.  
USING PUMP HAVING CAPACITY OF 325 LBS. PER HOUR



Comparison Graph Between Voluvalve and "V"-Ported Metering

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### Design

The Fluimatic is built standard with a high-low or modulating actuator that positions the Voluvalve. When the actuator is wired in parallel with the burner air damper positioning actuator, the proper air-oil ratio throughout the firing range of the burner will be maintained.

The Fluimatic will deliver oil to the burner at pressures up to 100 psig, and has a turn down ratio of 20:1. The suction or primary pump has to pull 26" Hg vacuum by test before shipment from factory.

There are no gaskets in the Fluimatic pumps. All surfaces are grounded and lapped for facing precision fit; assuring long life with the lowest possible maintenance. Once a year cleaning is the only recommended maintenance.

The Fluimatic system does not rely upon critical oil pressure, springs, oil regulation valves, or other complicated arrangements difficult to maintain in proper adjustment.

Aside from the oil circulation pumps, there are only two moving parts. Once adjusted for the requirements of the burner, it requires no further attention.

The extremely slow speed and the precision workmanship (test to 26" HG of the dual oil pumps assure long, trouble-free operation. Best results are obtained by limiting design capacity to the rate required by the boiler rather than matching the burner.

### Construction

The Fluimatic system shall be factory assembled on a structural steel channel base and shall include a base mounted syncro-gear motor connected by a flexible coupling, directly connected to dual pump and Voluvalve oil metering reservoir assembly.

Rotating parts shall have a steel OSHA guard. Fluimatic system to be provided with factory installed linkagel essservo type actuator (15 ft./lb. rated to position the Voluvalve oil metering system (Triac or 4-20mA input signal

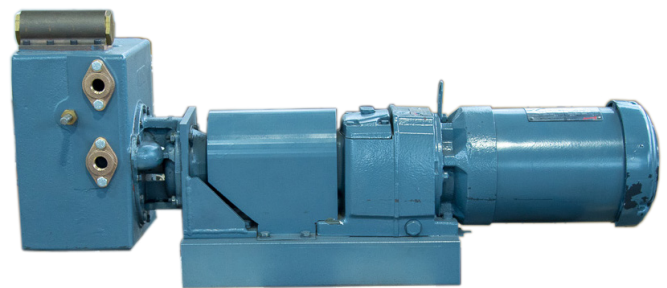
Provide and mount TEFC rigid base syncro-gear NEMA frame motor. Electrical characteristics to be 208/230/460 volts, 3Ph, 60 HZ

### Installation

The installation of the Fluimatic system is made with a minimum of changes to the oil piping. Existing oil heaters and strainers are utilized. Wiring connections are simple. Normally, only standard piping fittings are required to complete the installation. The oil piping between the Fluimatic and the burner handles only the oil required by the burner, therefore, this piping can be sized accordingly. Job conditions will determine the best location of the Fluimatic system.

The Fluimatic can be located close to the oil supply; however, it will work equally well if located close to the burner where its voluvalve positioning lever can be linkconnected to the burner air damper actuator. This eliminates the need for the factory supplying the modulating actuator with the Fluimatic.

On multiple burner installations where an oil supply loop system is used, Fluimatic units for each burner can be placed at the most advantageous location to eliminate piping cost.



*Fluimatic System with Actuator attached*

# FLUIMATIC SYSTEM

## Specifications

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Dual Pump: 25 to 175 GPH  
 Rotary Gear Type

Fluid: No. 2,4 or 6 oil  
 Consult Factory for other fuel types

Motor: Syncro-Gear Type  
 Base Mounted TEFC construction  
 NEMA Frame

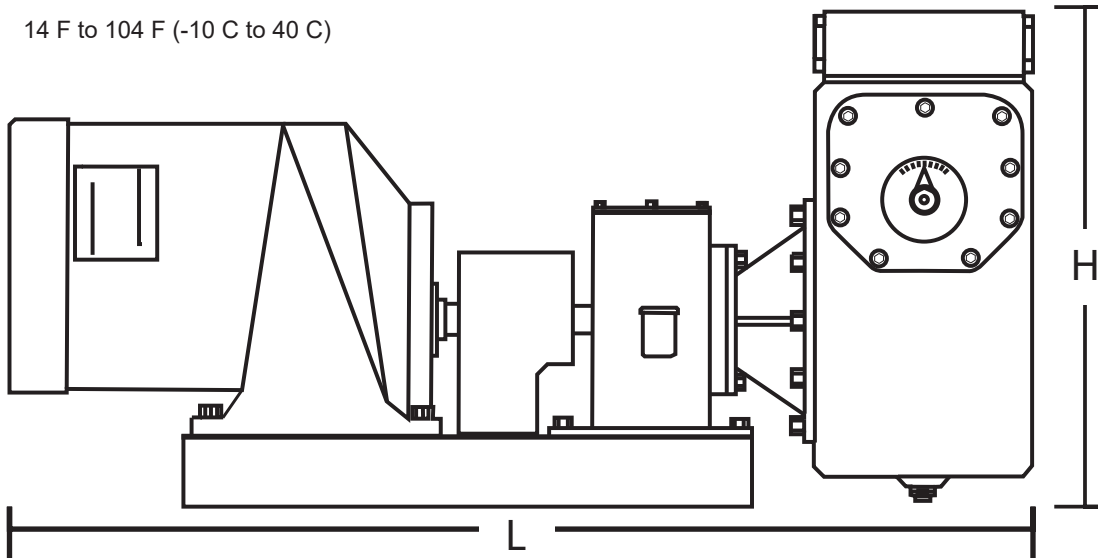
Voltage: 208/230/460 Volts- 3 Ph – 60Hz

Actuator: 15 Ft/lbs., Servo Type

Voltage: 120 VAC

Input Signal: Triac or 4-20 mA

Ambient Temp: 14 F to 104 F (-10 C to 40 C)



Size No.	Gallons per Hour		Pump Motor H.P.	R.P.M. of Pumps	Approx. Overall Dimensions- Inches*			Approx. Shipping Weight Lbs.
	Suction or Primary Pump	Pressure Pump			Height	Width	Length	
1	56	17	1/3	190	22	13	29	255
2	56	20	1/3	190	22	13	29	255
3	56	25	1/3	190	22	13	29	255
4	103	32	1/2	350	22	13	29	255
5	103	40	1/2	350	22	13	29	255
6	103	50	1/2	350	22	13	29	255
7	103	61	1/3	350	22	13	29	255
8	158	82	3/4	230	22	13	29	295
9	168	102	3/4	155	23	15	35	315
10	379	130	1 1/2	350	23	16	33	300
11	379	180	1 1/2	350	23	16	33	300
12	379	228	1 1/2	350	23	16	33	300

\*These dimensions are for units with 2- or 3-phase motors only  
 Positioning actuator requires 120 volt, single phase, 60 cycle current.  
 Specifications subject to change without notice.

## FLUIMATIC SYSTEM

### Suggested Specification

#### **Suggested Specification**

Furnished and install fully automatic Fluimatic system with a manufactures' rating of not less than \_\_\_\_\_ GPH or a grade of oil up to 300 SSF@ 122 F.

Fluimatic system shall be factory assembled on a structural steel channel base and shall include a base mounted syncro-gear motor connected by a flexible coupling directly connected to dual pump and Voluvalve oil metering reservoir assembly.

Rotating parts shall have a steel OSHA guard, an integral gear-type fuel oil pumps driven directly by a syncro-gear type motor, shall maintain a constant pressure at the orifice of the Voluvalve, which meters the oil flow discharge.

Fluimatic system to be provide with factory installed linkage-less servo type actuator, 15 ft./lbs. rated, to position the oil metering system via Triac or 4-20 mA input signal. Electric characteristics to be \_\_\_\_\_V-3Ph-60Hz.

Fluimatic system shall be Preferred Utilities Manufacturing Corporation Danbury, CT Size\_\_\_\_\_, rate at \_\_\_\_\_ GPH of No. 2,4, or 6 fuel oil against a discharge pressure of 150