Typical Installations of Flue Dilution Fans

**Fig 1**

**GBDF/SSDF Flue Dilution Fan Multiple Boiler Installation**

**Fig 2**

**GBDF/SSDF – Flue Dilution Fan Single Boiler Installation**

**Typical Installations**

Important when designing and installing a dilution system incorporating Airflow flue dilution fans, attention should be paid to the latest edition of the following standards and guides.

(i) BS6644: 2005 Installation of gas fired hot water boilers of rated input between 60 kW and 2 MW.


(iii) Department of Environment – Chimney heights; Third Edition of the 1956 Clean Air Act Memorandum. (Defra Amended) Clean Air Act – 1993

The boiler is connected by a vertical flue to a header which is open to the “outside” air at both ends. One end of the header acts as the primary air intake for the dilution air and the other as the discharge. The fan is located on the discharge side of the header duct. Note: a draught stabiliser or diverter must be incorporated in the boilers primary flue, if not part of the boiler. Shown in Fig 2 is a typical boiler house installation incorporating an Airflow dilution fan illustrating the requirements for satisfactory and safe operation.

Enhanced corrosion resistance versions (SSDF series) with stainless steel fan cases are also available for installation where regulations or the specification calls for stainless steel ducting, and when high efficiency boilers such as modular designs are likely to produce condensation. SSDF’s are therefore recommended for installations where condensation will occur.

**Safety**

- Differential Pressure Safety Switch, which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.

**Ease of Use**

- 6 or 10 Pole Plug and Socket for easy wiring and installation.

**The Range**

The Airflow Range of Ecodesign ErP 2013/2015 Compliant flue dilution fans is available in 5 sizes to satisfy the dilution needs of industrial and commercial boilers rated up to 600 kW (2,000,000 Btu) input.

Each size is available in standard form (GBDF series) for atmospheric boilers and atmospheric water heaters of circa 75% efficiency. If excessive corrosion causing the failure of a GBDF series unit is due to the presence of residual condensate, then this will not be covered by our warranty.

Enhanced corrosion resistance versions (SSDF series) with stainless steel fan cases are also available for installation where regulations or the specification calls for stainless steel ducting, and when high efficiency boilers such as modular designs are likely to produce condensation. SSDF’s are therefore recommended for installations where condensation will occur.

- SSDF3
  - Easier electrical Connections
  - Switch which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.
  - Differential Pressure Safety Switch which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.
  - 6 or 10 Pole Plug and Socket for easy wiring and installation.
  - SSDF3
  - Easier electrical Connections
  - Switch which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.
  - Differential Pressure Safety Switch which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.
  - 6 or 10 Pole Plug and Socket for easy wiring and installation.
  - SSDF3
  - Easier electrical Connections
  - Switch which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.
  - Differential Pressure Safety Switch which will activate if the fan stops operating or if the duct system becomes blocked, thus shutting down the boiler.
  - 6 or 10 Pole Plug and Socket for easy wiring and installation.

**Airflow Ventilation Solutions**

- Call: 01494 525252
- Visit: airflow.com

‘The Low Level CO₂ Discharge Solution for Industry’

Innovative  Compliant  Flexible
**Discharging low level CO2 safely**

The relay contacts are rated at 5A maximum for non-inductive load.

a) Loss of fan air supply due to blocked motor packs please contact our technical department.

**Tech Support / Spares**

www.airflow.com / 72546601

For technical support on the selection of your airflow fan or information on our spare parts please contact our technical department.

**Safety**

Correct installation also ensures a long and trouble-free service life. However on the rare occasion that a problem may occur with the fan or in the duct system the built-in self-closing pressure safety switch is an important safety feature.

This switch consists of a relay circuit which will fail-safe and prevent operation of the gas burner under the following conditions:

- Insufficient air supply due to locked inlet or outlet louvres
- Motor thermal overload
- Insufficient mains power
- Intermittent power supply

This relay contact is rated at 5A maximum for non-inductive load.

For normal operation this switch allows the boiler to function when the fan is operating correctly and discharges air into the intake fan.

**Choosing the Correct Size and Type of Fan**

Where possible these should be at least 2 metres of ducting from the fan to the burner. This should be 1.5 times the diameter of the discharge duct for a circular duct. The volume flow rate of the duct should be greater than a given percentage of the boiler's rated input. Flow rate in litres/sec x rated input of boiler in kW

Flow rate in litres/sec x rated input of boiler in kW

The volume flow rates provided by the fan will depend on the static pressure (in Pa) by the site engineer of the ducting system and the height of the discharge duct together with the duct system losses. The performance table below shows selection of fans to be used for a given size of discharge duct, based on the minimum discharge duct diameter. The fans are suitable for maximum height difference 10 m and the fans must be connected to the building's exhaust system. Where in the discharge duct is not possible then the fans should be installed to a height of 2.5 times after the fan outlet.

The fans from 0.4 to 0.9 kW output should be installed to a height of 1.65 times after the fan outlet.

**Flue Discharge GBDF & SSDF range**

With the main advantages of avoiding the use of catalysts or separation, Flue regulations require that if the products of combustion are directed at open stacks, then the CO2 content must be for 1 hour testing. The airflow GBDF range of EDP 46130 is complete fans achieve this by introducing fresh air into the balance discharge duct and discharging the flue gases.

**Flue Discharge Discharging low level CO2 safely**

The relay contacts are rated at 5A maximum for non-inductive load.

a) Loss of fan air supply due to blocked motor packs please contact our technical department.

**Tech Support / Spares**

www.airflow.com / 72546601

For technical support on the selection of your airflow fan or information on our spare parts please contact our technical department.

**Safety**

Correct installation also ensures a long and trouble-free service life. However on the rare occasion that a problem may occur with the fan or in the duct system the built-in self-closing pressure safety switch is an important safety feature.

This switch consists of a relay circuit which will fail-safe and prevent operation of the gas burner under the following conditions:

- Insufficient air supply due to locked inlet or outlet louvres
- Motor thermal overload
- Insufficient mains power
- Intermittent power supply

This relay contact is rated at 5A maximum for non-inductive load.

For normal operation this switch allows the boiler to function when the fan is operating correctly and discharges air into the intake fan.

**Choosing the Correct Size and Type of Fan**

Where possible these should be at least 2 metres of ducting from the fan to the burner. This should be 1.5 times the diameter of the discharge duct for a circular duct. The volume flow rate of the duct should be greater than a given percentage of the boiler's rated input. Flow rate in litres/sec x rated input of boiler in kW

Flow rate in litres/sec x rated input of boiler in kW

The volume flow rates provided by the fan will depend on the static pressure (in Pa) by the site engineer of the ducting system and the height of the discharge duct together with the duct system losses. The performance table below shows selection of fans to be used for a given size of discharge duct, based on the minimum discharge duct diameter. The fans are suitable for maximum height difference 10 m and the fans must be connected to the building's exhaust system. Where in the discharge duct is not possible then the fans should be installed to a height of 2.5 times after the fan outlet.

The fans from 0.4 to 0.9 kW output should be installed to a height of 1.65 times after the fan outlet.

**Flue Discharge GBDF & SSDF range**

With the main advantages of avoiding the use of catalysts or separation, Flue regulations require that if the products of combustion are directed at open stacks, then the CO2 content must be for 1 hour testing. The airflow GBDF range of EDP 46130 is complete fans achieve this by introducing fresh air into the balance discharge duct and discharging the flue gases.

**Flue Discharge Discharging low level CO2 safely**

The relay contacts are rated at 5A maximum for non-inductive load.

a) Loss of fan air supply due to blocked motor packs please contact our technical department.

**Tech Support / Spares**

www.airflow.com / 72546601

For technical support on the selection of your airflow fan or information on our spare parts please contact our technical department.

**Safety**

Correct installation also ensures a long and trouble-free service life. However on the rare occasion that a problem may occur with the fan or in the duct system the built-in self-closing pressure safety switch is an important safety feature.

This switch consists of a relay circuit which will fail-safe and prevent operation of the gas burner under the following conditions:

- Insufficient air supply due to locked inlet or outlet louvres
- Motor thermal overload
- Insufficient mains power
- Intermittent power supply

This relay contact is rated at 5A maximum for non-inductive load.

For normal operation this switch allows the boiler to function when the fan is operating correctly and discharges air into the intake fan.

**Choosing the Correct Size and Type of Fan**

Where possible these should be at least 2 metres of ducting from the fan to the burner. This should be 1.5 times the diameter of the discharge duct for a circular duct. The volume flow rate of the duct should be greater than a given percentage of the boiler's rated input. Flow rate in litres/sec x rated input of boiler in kW

Flow rate in litres/sec x rated input of boiler in kW

The volume flow rates provided by the fan will depend on the static pressure (in Pa) by the site engineer of the ducting system and the height of the discharge duct together with the duct system losses. The performance table below shows selection of fans to be used for a given size of discharge duct, based on the minimum discharge duct diameter. The fans are suitable for maximum height difference 10 m and the fans must be connected to the building's exhaust system. Where in the discharge duct is not possible then the fans should be installed to a height of 2.5 times after the fan outlet.

The fans from 0.4 to 0.9 kW output should be installed to a height of 1.65 times after the fan outlet.