IN DUCT DIRECT FIRING LINE BURNER VEINAIRFLAM Serie

CE

MADE IN FRANCE

ORIGINE FRANCE GARANTIE

Corps / Body
BV cert.6021654

L.LAIR ETABLISSEMENTS

Indice 5 – 01 01 2017

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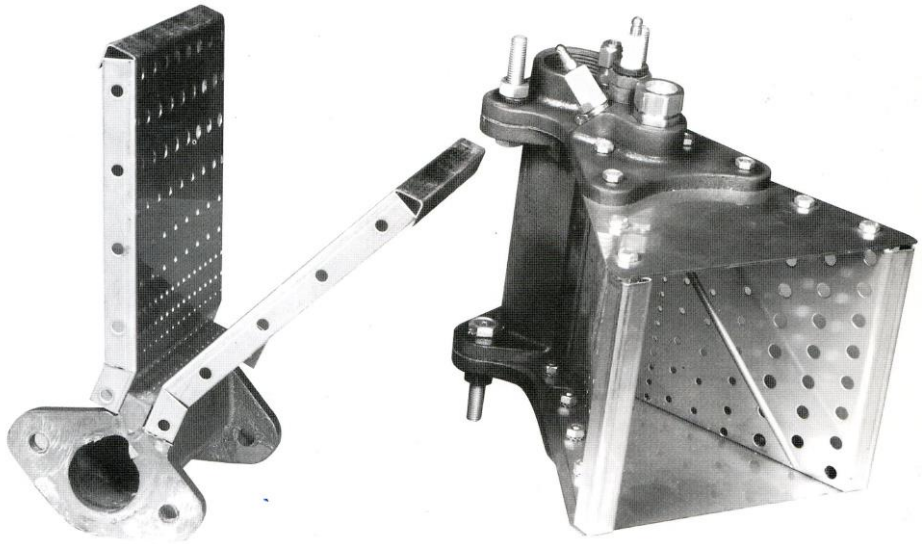

The **VEINAIRFLAM** burners are raw gas burners designed for direct-fired fresh air or partially mixed air heating. They are the basic standard for low, middle or semi high temperature (up to 850 °C) make-up applications in many industrial fields.

The **VEINAIRFLAM** burners produce a uniform, odorless, and smokeless flame ideal for heating fresh air in make-up and process air heating applications. **VEINAIRFLAM** burners design provides stable operation over a wide range of velocities, inputs, and fuels.

The **VEINAIRFLAM** burners design make possible to operate the burner without a combustion air blower. The burner with no moving parts depends on the air speed across the burner from the airflow in the duct. The turbulence effect created by the mixing plates is heightened by provision of a diaphragm air plates accelerating the air speed all around the burner's location. This results in a slight pressure drop in the air to be heated. The pressure drop or pressure loss practically does not exist with the **VEINAIRFLAM-V** series who is designed with a air combustion blower integrated wich doesn't require diaphragm or profiles plates.

The **VEINAIRFLAM** burners are directly mounted in the airstream to be heated and a specific air velocity is created all around the burner to provide progressive aeration of the space between the burner air/gas mixing plates. The oxygen necessary for combustion is taken directly from the air witch enters through the mixing plates hole's and mixes gradually with the gas. The burner is therefore a burner with a very large excess air for complete gas combustion. 100 % efficiency (on gas Pci).

Each component of a **VEINAIRFLAM** burner consist of a cast iron feed pipe and very high quality stainless steel for high temperature perforated mixing plates. ½ feet & 1 feet linear straight sections, Tee sections and H sections (3 ft) are designed for a mechanical tailor made burner without power limitation. **VEINAIRFLAM** burners are made from modular components allowing a large number of configurations and make it possible to obtain any desired power rating.

VEINAIRFLAM burners up to 50 MW and more over are not impossible.

VEINAIRFLAM burners are working with gas at low pressure (only gas, no liquid).

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BASICS APPLICATIONS :

Standard low température (T<450°C) applications :

- Paint shops, Paint booths,
- Space heating (Make Up systèm),
- Oven drying booths.
- Cereals, fruits, vegetables dryers,

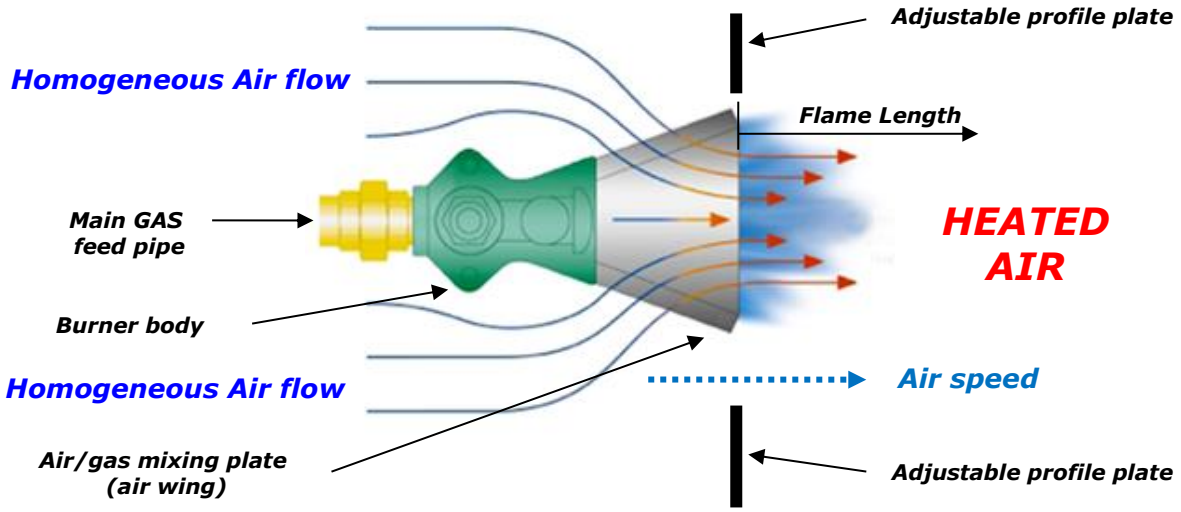
Standard middle or high temperature (T > 450°C) applications:

- Chemical heating systems,
- Mineral heating systems
- Pulverization towers,
- Drying ovens,
- Recirculated heating systems
- Variable flow rate heating systems,
- Gas effluents incineration,
- Any fresh or mixed air heating sytem up to 850°C and much more….

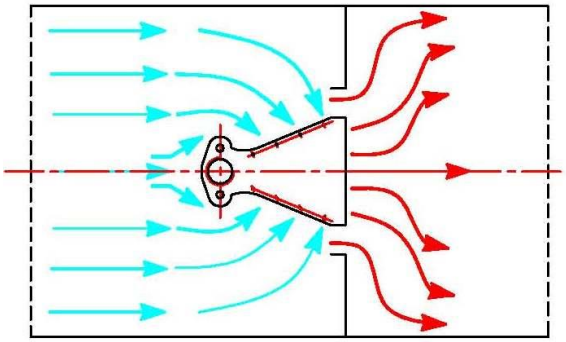
The **VEINAIRFLAM** burners can also be mounted downstream of a steam or hot water coil thus bringing the air to a higher temperature. This can boost the capacity of an existing air heating installation.

Many **VEINAIRFLAM** burner design are possible**,** the most useful are below described:

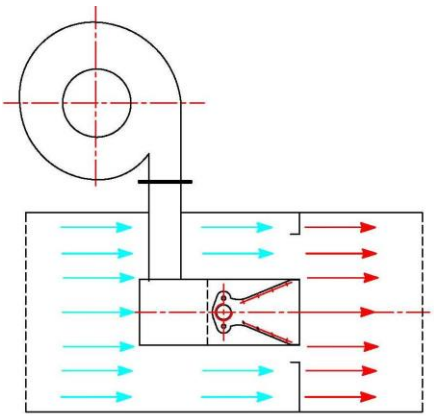
VEINAIRFLAM BASIC STANDARD IN TOTAL AIR STREAM



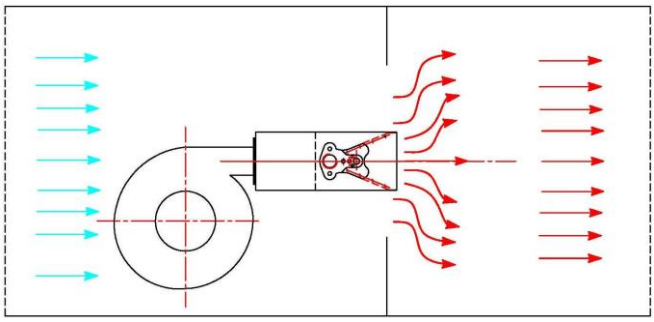
STANDARD VEINAIRFLAM
IN AIR STREAM
For direct fired heating
(FRESH AIR or RECYCLED AIR)



STANDARD VEINAIRFLAM-V
FOR RECYCLED AIR or VARIABLE AIR FLOW



STANDARD VEINAIRFLAM IN AIR STREAM For direct-fired heating
FRESH AIR or RECYCLED AIR or VARIABLE FRESH AIR FLOW FROM 20% TO 100%



SAFETY :

- The material in this manual is believed adequate for the intended use of the product. If the product is used for purposes other than those specified herein, confirmation of validity and suitability must be obtained by **L.LAIR.** No further warranty is expressed or implied.

- Read this entire manual before attempting to start the system. If any part of the information in this manual is not understood, contact **L.LAIR** before continuing.

- The burners covered by this guide are designed to mix gas with air and burn the resulting mixture. All gas burning devices are capable of producing fires and explosions if improperly applied, installed, adjusted, controlled or maintained.

SAFETY :

- Only qualified competent personnel with experience of combustion systems are allowed to install adjust or maintain the gas system.
- All installation work must be carried out in compliance with current legislated standards.
- Make sure the area is clean.
- Inspect the gas system, ensure that all components are clean and free from damage.
- Use appropriate support and handling equipment when installing the gas systems.
- Protect the gas systems from weather, damage, dirt and moisture.
- Protect the gas systems and components from excessive temperatures and humidity.
- Make sure the components are clean and free of damage.
- Store the components in a cool, clean, dry room.
- After making sure everything is present and in good condition, keep the components in original packages as long as possible.
- The position and amount of components are determined by three factors: burner design, system design, and the control method that you choose. Use the information in that data sheet to build your system.
- All limit controls and safety equipment must comply with all applicable local codes and/or standards and must be listed for combustion safety by an independent testing agency.
- All the electrical wiring must comply with all applicable local codes and/or EC standards.
- All the gas piping must comply with all applicable local codes and/or EC standards.
- Make sure that you install the system in such a way that you can get easy access to the system for inspection and maintenance.
- Any operation expressly prohibited in this manual, any adjustment, or assembly procedures not recommended or authorized in these instructions shall void the warranty.

MAIN TECHNICAL SPECIFICATIONS :

VEINAIRFLAM *TECHNICAL SPECIFICATIONS*	***PARAMETERS REQUIRED***
Max power supplied by 1 linear unit	Approx. 300 KW *(according to gas pressure)*
Air speed at the burner	from 12 to 23 m/s
Air pressure drop at the burner	from 1,2 to 3 mbar
Average Gas pressure at the burner *	from 10 to 45 mb *(excluding specific conditions or design)*
Ignition system *(High tension 8.5 KV recommended)*	Burner body Spark ignition integrated
Pilot gas (Natural gas & LPG intermittent operation recommended)	Burner body integrated
Gas Pilot power supplied *(pilot alone)*	Approx. 7 to 15 KW
Max Température burner air inlet	350 °C *(excluding specific conditions or design)*
Max Température burner air outlet	850 °C *(excluding specific conditions or design)*
Max Temperature burner heating differential	450 °C *(excluding specific conditions or design)*
Air combustion MIN O^2	18 %
Flame safety systems	Flame rod or UV sensor *(for LPG deeply advised)*
Fuels	Natural Gas – LPG - Bio Gas *(only on special request)*

- *This manual provides information in the use of the burner for its specific design purpose. Do not deviate from any instructions or application limits described herein without written advice from L.LAIR.*
- *All characteristics & technical specifications above are for standard burners, excluding specific conditions or design. They are based on workshop laboratory and on standard conditions (15°C, at sea level, 1013 mb). Different conditions and especially from airflow rates can modify the capacities or features. For any different situations or boosted applications, contact L.LAIR technical support before. Specifics designed series can supply different power rates according fitting or tailor made burners.*
- *All the power supply in this above features are on natural gas.*
- *All the pressures shown are understood as differential and for natural gas H type LCv = 10,7 KW/m3 d = 0;6.*

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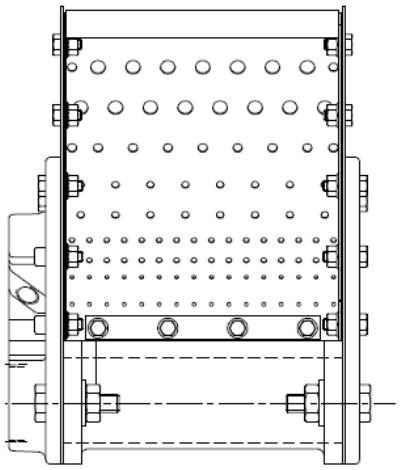
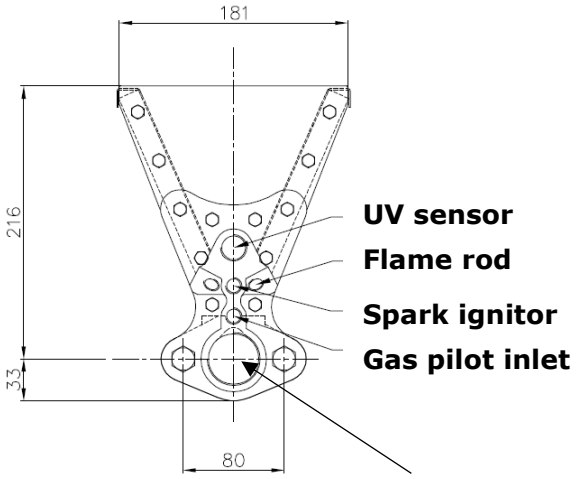
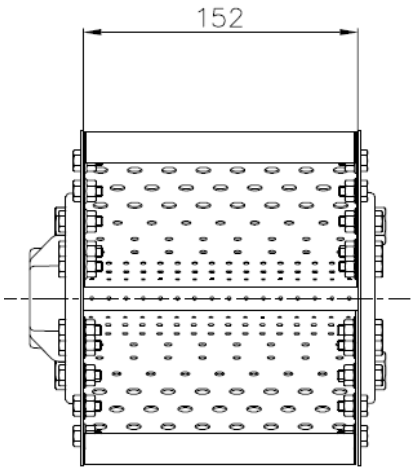
MAIN DIMENSIONS for a ½ ft straight Unit





MAIN GAS INLET Rp 1'' ¼



Note : *Dimensions are in mm.*

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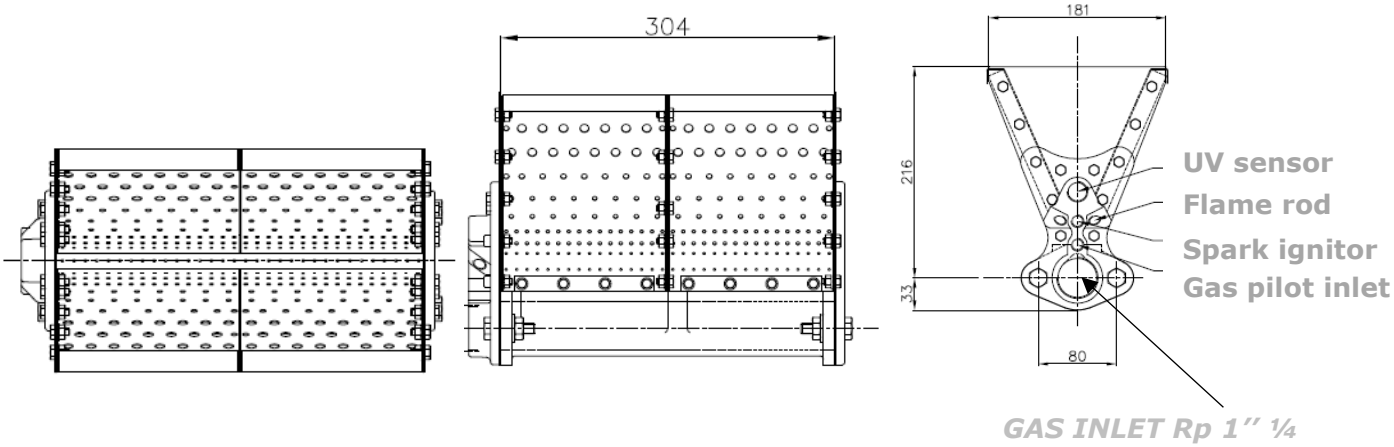
- GAS inlet plate connections :

  - Rp 1'' ¼ for main gas inlet,
  - Rp 14 x 125 for spark ignitor
  - Rp ¼'' for flame rod
  - Rp ½'' for UV sensor
  - Rp 3/8'' for gas pilot inlet

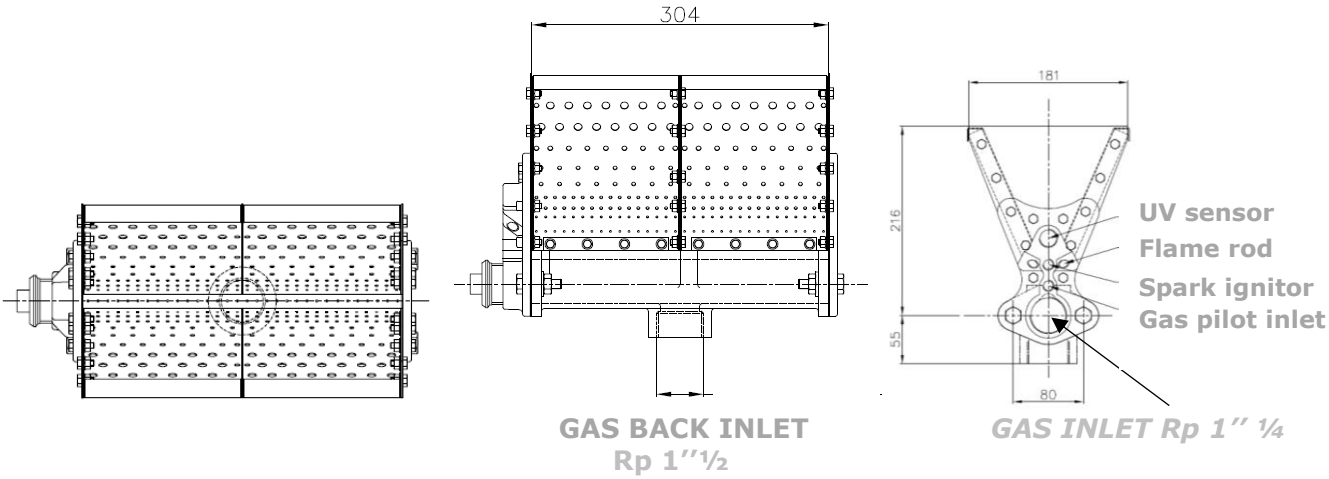
- Flame rod connections are Rp ¼'' and available on 3 clearly different positions.

MAIN DIMENSIONS for a 1 ft straight Unit

Standard Unit



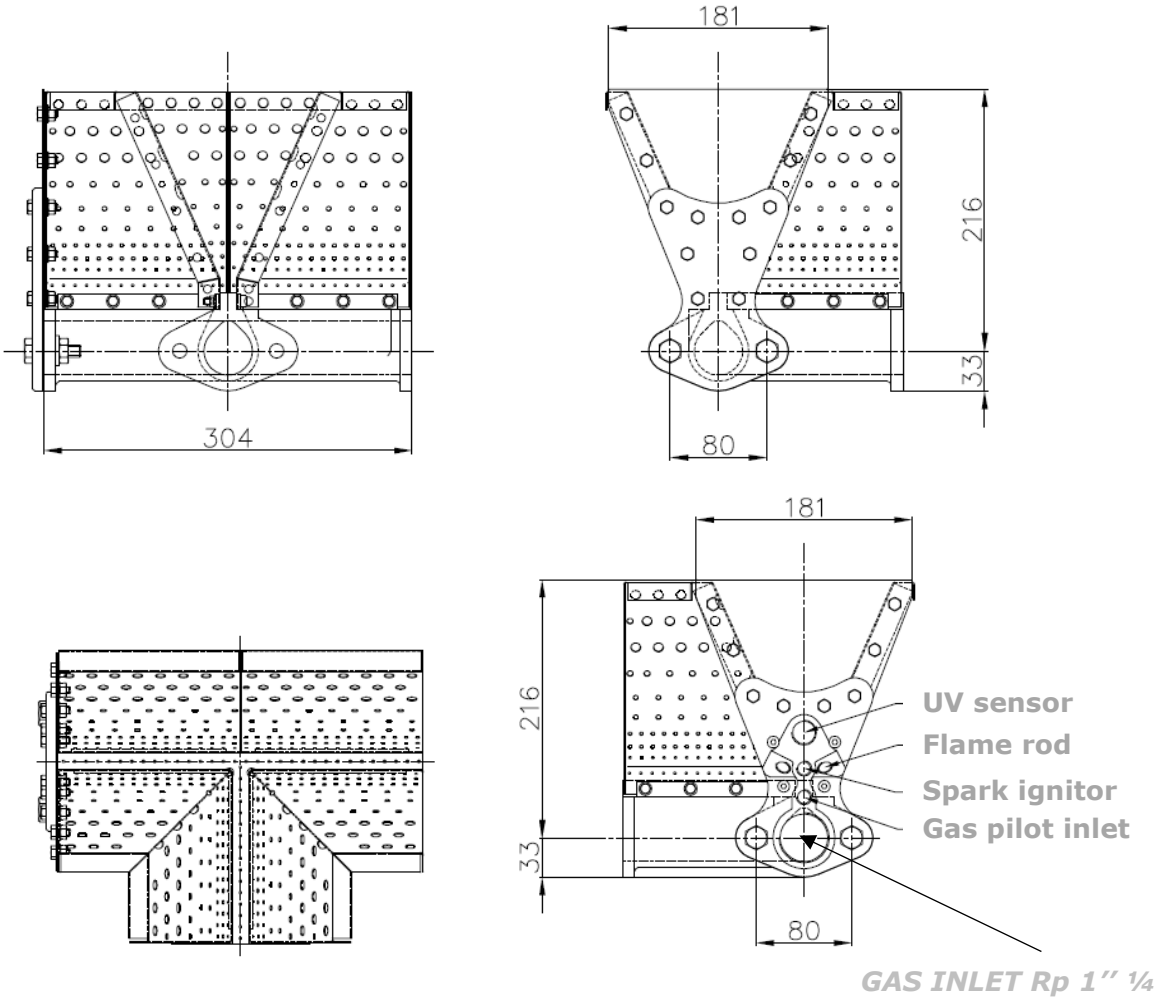
Standard Unit with back gas inlet Rp 1'' ½



Note : *Dimensions are in mm.*

- GAS inlet plate connections :
  - Rp 1'' ¼ for main gas inlet,
  - Rp 14x125 for spark ignitor
  - Rp ¼'' for flame rod
  - Rp ½'' for UV sensor
  - Rp 3/8'' for gas pilot inlet
- Flame rod connections are Rp ¼'' and available on 3 clearly different positions.

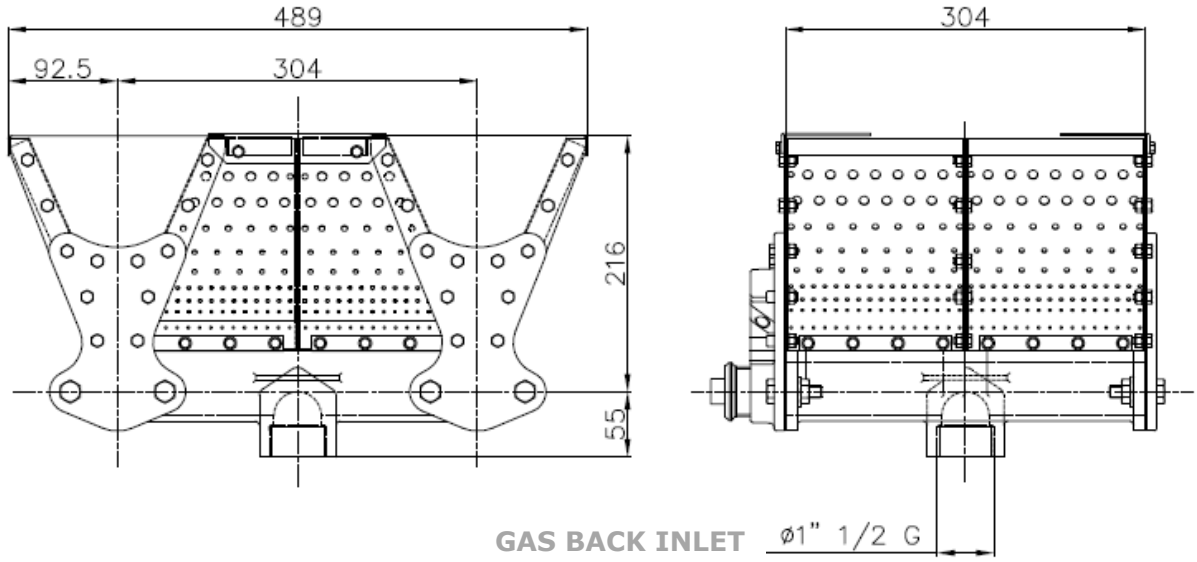
MAIN DIMENSIONS for a Tee SECTION (=1,5 ft straight) :

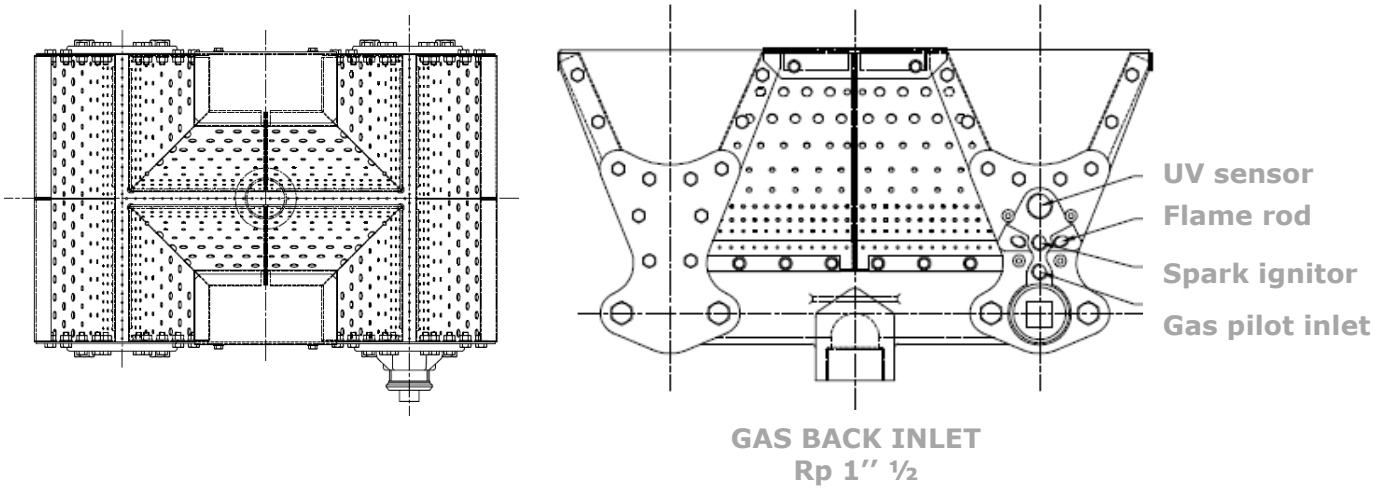


Note : *Dimensions are in mm.*

- T section is a 1,5 linear Unit power equivalent.
- GAS inlet plate and body connections :
  - Rp 1'' ¼ for main gas inlet,
  - Rp 14 x 125 for spark ignitor
  - Rp ¼'' for flame rod
  - Rp ½'' for UV sensor
  - Rp 3/8'' for gas pilot inlet
- Flame rod connections are Rp ¼'' and available on 3 clearly different positions.

MAIN DIMENSIONS for a H SECTION (=3 ft straight):





Note : *Dimensions are in mm.*

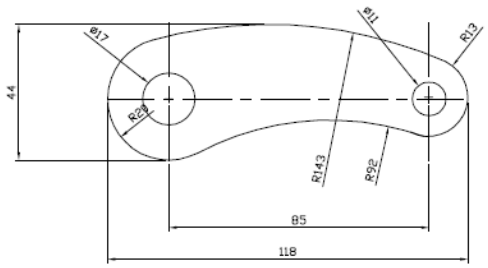
- T section is a 3 linear Unit power equivalent but with a gas back inlet Rp 1''½ in central position (245/490 mm - 152/304 mm).

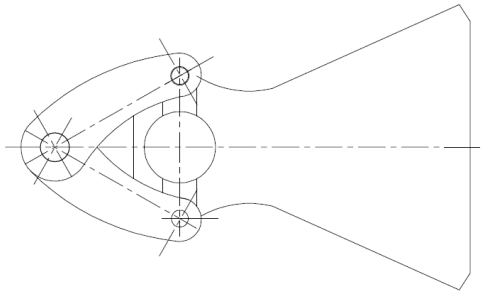
- GAS inlet plate and body connections :

  - Rp 1'' ¼ for main gas inlet,
  - Rp 1'' ½ for main gas back inlet,
  - Rp 14x125 for spark ignitor
  - Rp ¼'' for flame rod
  - Rp ½'' for UV sensor
  - Rp 3/8'' for gas pilot inlet

- Flame rod connections are Rp ¼'' and available on 3 clearly different positions.

USB support - code N° 023577 *(2 units minimum)*





mounting example :

*GAS INLET SPECIFICATIONS * :*

GAS CONNECTION	*GAS INLET*	*Unit burner section*	*Gas pressure*	*Max unit section for power supplied*
* 1'' ½	BACK	1 straight unit	Standard	4 unit or 900 kW
* 1'' ¼	SIDE	1 straight unit	Standard	4 unit or 600 kW
* 1'' ½	BACK	1 H unit	Standard	3 unit or 950 kW

SEPARATED SPARE PARTS:

Only order replacement or spare parts from GSC GLOBAL SERVICE CLIENT , components division of L.LAIR for **VEINAIRFLAM** burners to ensure **L.LAIR** warranty, EEC origin and EC compliance.

Many other spare parts for VEINAIRFLAM burners are sold in our Components Department GSC

☞ *To calculate the profile plates of the diaphragm settings from air to the burner:*

VEINAIRFLAM BURNER Units	**BURNER NET FREE AREA**
½ unit	0,0233 m²
1 linear unit	0,0465 m²
1 straight linear unit with gas back inlet	0,0465 m²
1 T unit *(= 1,5 linear unit)*	0,0558 m²
1 H unit *(= 3 linear unit)*	0,1115 m²

☞ *(Ask for our training program on air conditioners equipped with VEINARFLAM burners).*

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WORKING & HANDLING:

- ☞ Make sure the area is clean.
- ☞ Inspect the gas system, ensure that all components are clean and free from damage.
- ☞ Use appropriate support and handling equipment when installing the gas systems.
- ☞ Protect the gas systems from weather, damage, dirt and moisture.
- ☞ Protect the gas systems and components from excessive temperatures and humidity.

STORAGE :

- ☞ Make sure the components are clean and free of damage.
- ☞ Store the components in a cool, clean, dry room.
- ☞ After making sure everything is present and in good condition, keep the components in original packages as long as possible.

POSITION of COMPONENTS :

☞ The position and amount of components are determined by three factors:

- ✓ Burner design,
- ✓ System design,
- ✓ The control method that you choose.

☞ Use the information in that data sheet to build your system.

SAFETY EQUIPMENTS :

☞ All the SAFETY SYSTEMS must comply with all applicable local codes and/or EC standards.

ELECTRICAL WIRING:

☞ All the electrical wiring must comply with all applicable local codes and/or EC-EN 60204-1 standard.

GAS & PIPES CONNECTIONS :

☞ All the gas connections & piping must comply with EN 746-2 standard and all applicable local codes.

WHERE TO GET THE STANDARDS ?

EN normalization and standards are available at :

- ✓ AFNOR (www.afnor.fr)
- ✓ European Committee for Normalization.

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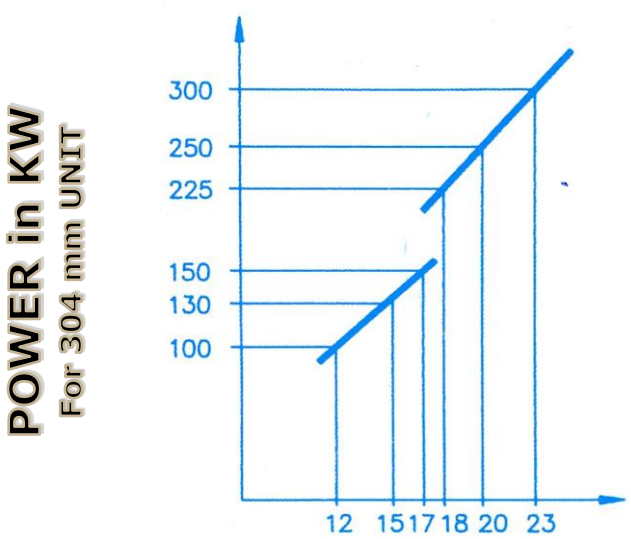
VEINAIRFLAM CAPACITIES FOR ADJUSTMENTS :



COMBUSTION AIR SPEED at the burner profile plate in m/s

➢ Pressures & average power for burner Adjustments & start up:

	VEINAIRFLAM 150 - - / - - 300 types
MAX. average power supplied for 1 linear unit	*150 KW - - / - - 350 KW* (according to gas pressure, excluding specific conditions or design)
MIN. average power supplied for 1 linear unit	*6 KW - - / - - 50 KW* (*according to gas pressure, excluding specific conditions or design*))
Average standard gas pressure	*10 - - / - - 45 mb* (*excluding specific conditions or design*)
Average flame length	*550 - - / - - 950 mm* (*according to gas pressure, excluding specific conditions or design*)
Air speed all across the burner	*12 - 17 m/s --- / --- 18 - 23 m/s*
Air pressure drop across the burner	*10/15 mmCE --- / --- 25/35 mmCE*
Turn down ratio average rate	*25 : 1 - - / - - 6 : 1*

☞ *All the gas pressures are considered in differential from the combustion chamber downstream the burner and are for natural gas at 15°C – sea level - 1013 mb - and natural gas H type LCv =10,7 KW/m3 (st), d= 0,6. For LPG the pressure is lower than natural gas (approx. ½) for a bit more min. power supplied.*

☞ *All characteristics & technical specifications above are based on workshop bench tests and standard conditions in laboratory (15°C at sea level, 1013 mb). Different conditions and especially from airflow rates can modify the capacities or features. For any different situations or boosted applications, contact L.LAIR technical support before. Specifics designed series can supply different power rates according fitting or tailor made burners.*

☞ The flame length of the **VEINAIRFLAM** burner varies with the air speed. The higher the air speed is, the shorter the flame length is and of course, the lower the air speed is the far away the flame goes.

☞ The flame appearance thus indicates disparities in air distribution on the burner. The flame must be uniform on the entire **VEINAIRFLAM** burner.

☞ A long weak flame indicates an air speed too low. In this case, the adjustable side plates on the diaphragm must be closed to increase the air speed.

☞ A too short and very blue flame indicates an air speed too high. In this case, the adjustable side plates on the diaphragm must be opened to decrease the air speed.

☞ The **VEINAIRFLAM** adjustments are very close to the air speed in the air duct at the burner. Its aeraulics and its appendices (filers, safeties, etc.) must be correct before starting up the **VEINAIRFLAM** burner.

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L.LAIR is SIEMENS SOLUTION PARTNER certified

Solution Partner HCS Building Technologies — SIEMENS

s a partner, fitter and installation engineer for: Honeywell Division combustion

CAUTION !

- **Only qualified and well-trained personnel are allowed to carry these instructions or procedures.**
- *Any operation from the whole or a single part of a heating system with gas burner must be done according to EC standards and must comply with all Machine Directives applicable to the gas system.*
- *Make sure that the system is installed in such a way that anybody can get easy access for inspection, maintenance routine or replacement.*
- *Do not bypass any safety feature! You can cause firing &/or explosions and danger.*
- *Never try to repair a system if it shows signs of damage. Act with great care and following instructions of the manufacturer of the heating system.*
- *Any operations as adjustments, installation, wiring, maintenance and troubleshooting of the mechanical and electrical parts of any system should be done by qualified personnel with good aptitude and experience with gas combustion equipments and safety.*
- *The best safety precaution is an alert and competent operator. Thoroughly instruct new operators so they demonstrate an adequate understanding of the equipment and its operation. Regular retraining must be scheduled to maintain a high degree of proficiency.*
- ***L.LAIR sarl** is a **TRAINING FRENCH REGISTERED COMPANY** and can provide training for plant maintenance engineers that will help to keep process running and high safety degree.*
- ***For further information or for a material – system definition, please contact L.LAIR Sarl technical support to get the right advice and to find the best solution for your process.***

According to Ets L.LAIR Sarl manufacturer's policy of continual products improvements, the product described in this data sheet is subject to change without notice or obligation.