

Operating manual.

LINDOFLAMM<sup>®</sup>

Acetylene special burner  
LF-H series.

**This operating manual is valid for the following models**

LF-H-4, 6, 8 and 16: High-performance manual burner for use with acetylene and oxygen

LF-H-2D and LF-H-2DK: Manually guided pre-heating burner for use with acetylene and compressed air

# Overview.

04-19 Operating manual (EN)

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# 1. General.

## 1.1 Introduction

The information in this document should be read and observed by anyone who works with and/or is responsible for a LINDOFLAMM acetylene special burner. Operators must be familiar with the information in this manual to correctly operate the device and avoid incidents. It is therefore very important that anyone responsible for the device fully understands this operating manual and has access to it at all times. This equipment may only be operated by persons aged 18 or over who have the prerequisite technical knowledge or have undergone training from a qualified individual. Operators must receive appropriate training and have been suitably instructed by a qualified person on all safety issues.

This manual covers different types of burner. Please note the technical specifications that apply to your particular model and refer to the corresponding burner datasheet (see section 1.2 Safety instructions).

## 1.2 Safety instructions

### Icons and instructions



#### Safety icon

This icon is located next to all safety instructions in this manual where failure to comply could pose a threat to life and limb. Pay attention to these instructions and take extra care in these situations. Inform all other operators about safety instructions. In addition to the instructions in this manual, operators must also be aware of and observe the occupational safety and accident prevention regulations that apply in their country.

### 1.2.1 Occupational safety instructions



LINDOFLAMM acetylene special burners are state-of-the-art devices and are safe to operate. However, operators who have not received the proper training and/or operators who use them incorrectly may be exposed to danger.



Anyone involved in the start-up, operation or maintenance (servicing and inspection) of LINDOFLAMM acetylene special burners must read and understand this entire operating manual.



LINDOFLAMM acetylene special burners must be used in compliance with the general occupational safety and accident prevention regulations valid in the operator's country.









Operators must wear suitable protective clothing.



LINDOFLAMM acetylene special burners must only be assembled, operated and serviced by authorised personnel who have received appropriate training and instructions on safe use.



Operators must undertake only to use LINDOFLAMM acetylene special burners if they are in perfect working order. Damaged burners must not be used.

- 
- Unauthorised modifications or changes that affect the safety of LINDOFLAMM acetylene special burners are prohibited.
- 
- The manufacturer's specifications regarding assembly, disassembly, reassembly, start-up, operation and servicing must be observed in order to ensure compliant use.
- 
- Work may only be carried out on the LINDOFLAMM acetylene special burner when it is not in operation and not connected to the gas supply. Please also ensure that no traces of gas remain in the hoses or the immediate vicinity.
- 
- Before commissioning the device, check for any possible sources of danger in the area where you are working, for example, risk of fire from highly flammable materials, gases or liquids. When heating with the burner, be aware that the heat generated will spread. Any heat-conductive material must therefore be cooled if necessary. Do not allow unignited acetylene-oxygen mixtures or acetylene-air mixtures to escape from the burner.
- 
- Before restarting the device after maintenance or inspection, always check that all protective, safety and monitoring components have been remounted and activated.
- 
- Never operate LINDOFLAMM acetylene special burners in areas where there is a risk of explosion.

### 1.2.2 Safety data sheets

Refer to the commissioning declaration.

Please pay particular attention to the data and safety datasheets listed in the commissioning declaration.

The following standards should also be observed:  
EN ISO 5172, EN ISO 3821, EN 560, EN 561, EN 730-1, EN ISO 9012

## 2. Scope/intended purpose.

LINDOFLAMM acetylene special burners are gas welding devices for oxyfuel processes. The shape and power of each model is tailored to specific application needs. The burners are built to the latest technical standards in compliance with applicable regulations (for example, EN ISO 5172, CR 13259).

This operating manual includes general information that applies to all types of burner. However, as each LINDOFLAMM acetylene special burner is designed for a specific application, users must refer to the information in the burner datasheet that applies to their particular model.

The burner you have received is designed for the following process(es):

Process	LF-H-4, 6, 8, 16	LF-H-2D, LF-H-2DK
Flame heating	●	●
Pre- and post-heating - welding	-	●
Flame straightening	●	-
Flame brazing	●	●
Fusing/melting	●	-

LINDOFLAMM acetylene special burners must only be used for the process(es) indicated above and only with the types of gas specified (see section 4.2.2).

Using a burner for other applications or for tasks that go above and beyond the applications indicated means the burner is not being used for the intended purpose. The user thus bears sole liability for any damage resulting from improper use.

The term 'intended purpose' also includes compliance with all instructions in this operating manual, adherence to all scheduled inspections, and compliance with the information in all datasheets (see also section 1.2 Safety instructions).

LINDOFLAMM acetylene special burners are not designed for use in water or in areas exposed to spray water.

Do not use the burner as a mechanical tool; deformation and damage will impair its function and use.



## 3. Burner data/identification.

The appendix provides an overview of the components (burner ID) in your LINDOFLAMM acetylene special burner (see section 9). The icons used are explained in the following sections.

## 4. Set-up, operation and supply equipment.

### 4.1 Set-up

LINDOFLAMM acetylene special burners comprise the following main components:

- Burner head
- Mixing pipe
- Mixing chamber with injector
- Coupling nut
- Handle with adjusting valve

The mixing chamber connects to the handle.

You will find a diagram of all components in the appendix (see section 9).

### 4.2 How LINDOFLAMM acetylene special burners work

#### 4.2.1 Operating principle

LINDOFLAMM acetylene special burners are gas welding devices. They work on a suction principle, where oxygen or compressed air flows through the injector and, on exiting the nozzle aperture, sucks in fuel gas from the ring canal surrounding the pressure nozzle. The two gases are then mixed in the mixing pipe and fed into the burner head.

Icons for mixing systems (see section 9):

- I = Mixing and suction
- ⊥ = Mixing and suction (with backflow resistance)

#### 4.2.2 Permissible types of gas

LINDOFLAMM acetylene special burners must only be used with the gas types marked on the burner.

Type of gas	Identification letter
Oxygen	O
Compressed air	AIR/DL/D
Acetylene	A

In order for LINDOFLAMM acetylene special burners to be used safely they must be supplied with the right amount of gas. Refer to information on operation pressures and consumption in the relevant burner datasheets.

## 4.3 Supply equipment

### 4.3.1 Hoses

Only use hoses that comply with EN ISO 3821 and that are at least 3 metres long. The hose sizes listed in the burner datasheet are recommendations. These dimensions should be adapted to conditions on site to achieve the correct operating pressures and consumption levels.

New hoses or hoses that might be contaminated on the inside should be cleaned prior to use using oil-free compressed air in order to remove any impurities.

All hose connections must comply with EN 560. Hoses must be secured to the hose couplings with fit-for-purpose hose clamps.

### 4.3.2 Pressure regulators

Pressure regulators ensure that the gas pressure remains consistent at the burner inlet. Standardised regulators should be used to ensure consistent pressure (for example, regulators that comply with EN ISO 7291 or EN ISO 2503)

### 4.3.3 Safety equipment

LINDOFLAMM acetylene special burners designed for use with oxyacetylene or an acetylene/compressed air mix must be equipped with multi-function safety devices (flashback arrestors) certified in line with EN 730-1. The size of the safety device depends on the gas flow rate and must be designed in line with the manufacturer's flow diagrams. If the burner's gas requirements exceed the capacity of a single safety device, multiple safety devices (flashback arrestors) should be fitted **in parallel**. Identical models must be used here. Connecting safety devices in series increases loss of pressure and should therefore be avoided.

# 5. Operating the burner.

## 5.1 Before start-up



The LINDOFLAMM acetylene special burner's components must be assembled in accordance with the parts diagram in the appendix (use a spanner to firmly tighten all connections).

The following points are particularly important and should be read carefully before you use the LINDOFLAMM acetylene special burner:

- Make sure that there is an adequate supply of gas (gas reserves, size of feed lines) – see burner datasheet.
- Check that the LINDOFLAMM acetylene special burner is not damaged and that it is clean. Pay particular attention to thread connections and sealing surfaces. Do not use damaged LINDOFLAMM acetylene special burners.
- Only use safety devices that comply with EN 730-1 (see section 4.3.3).
- Only use standardised hoses and hose connections (see section 4.3.1).
- Before using the LINDOFLAMM acetylene special burner for the first time or after a long period of downtime, test all burner connections and valves to ensure that there are no leaks, for example, using a leak spray designed specifically for this purpose.
- Carry out a suction test before using the LINDOFLAMM acetylene special burner for the first time (see section 5.2).
- Check that the gas pressure and flow are correct before you ignite the gas mixture.
- When purging the LINDOFLAMM acetylene special burner with operating gases, ensure that the escaping ignitable gas mixture does not pose a hazard to your environment.
- All parts that come into contact with oxygen must be free of oil and grease (risk of combustion).

## 5.2 Instructions for first-time commissioning

### 5.2.1 Suction test



The suction effect must be checked prior to operation if you are using the LINDOFLAMM acetylene special burner for the first time or after a long period of downtime. It must also be checked if you believe the LINDOFLAMM acetylene special burner is not drawing in combustion gas.

The suction effect must be checked using the following method:

- Close the acetylene valve on the pressure regulator or at the withdrawal point.
- Adjust the pressure of the oxygen or compressed air using the pressure reducer/pressure regulator in line with the information marked on the burner's mixing chamber.
- Unscrew the acetylene connection on the burner handle (coupling nut with left-handed thread).
- Open the acetylene valve on the burner handle.
- Open the oxygen or compressed air valve on the burner handle.
- Hold your finger over the acetylene connection on the burner handle.
- 

You should now feel the suction on your finger. If you cannot detect any suction or if oxygen or compressed air is escaping from the acetylene connection, **do not use the LINDOFLAMM acetylene special burner**. If the fault is the result of an assembly error, for example loose connections, this can be rectified by the user.

Repairs to the LINDOFLAMM acetylene special burner itself must only be carried out by specialists authorised by Linde AG.

### 5.2.2 Adjustment of operating pressures

Keep the acetylene and oxygen (or compressed air) valve closed at first. Slowly open the cylinder valves or withdrawal valves for the distribution lines and adjust the operating pressures on both pressure regulators. Use the data on the LINDOFLAMM acetylene special burner and in the table in the burner datasheet as a guide. Take the different lengths and diameters of the hoses into consideration as these may affect pressure levels.

## 5.3 Operating instructions

### 5.3.1 Igniting and adjusting the flame

The following steps must be carried out in sequence:

- Open the oxygen or compressed air valve on the burner handle.
- Open the acetylene valve on the burner handle.
- Ignite the gas mixture using a suitable means of ignition (for example, a gas igniter or igniting flame).
- Use the burner valves to adjust the flame to your individual application requirements.
- Once the flame is stable, check and, if necessary, readjust the operating pressures at the withdrawal points or on the LINDOFLAMM acetylene special burner.

### 5.3.2 Information for safe operation

You must comply with the following guidelines and ensure continued compliance with them in order to use the LINDOFLAMM acetylene special burner safely:



Make sure that the distance between the LINDOFLAMM acetylene special burner and the area you are working on remains as consistent as possible. This will deliver optimal

heat and prevent damage to the LINDOFLAMM acetylene special burner. Do not let flakes of foreign material, for example welding scale, block the burner bores.



The burner can only be operated safely and with consistent heat output if the secondary flame is supplied with sufficient ambient air for full combustion. If you are working in an area with poor ventilation, it may be necessary to provide additional ventilation. Otherwise, there is a risk of asphyxiation.



Hoses should be laid in such a way as to avoid bending, pinching or other mechanical damage that could interfere with the burner's performance. Hoses laid over pathways or roadways should be covered.

### 5.3.3 Shutting down

- Once you have finished your work, close the acetylene valve on the burner handle until the flame is extinguished.
- Close the oxygen or compressed air valve on the burner handle.
- If you are stopping work for a short period of time, simply close the cylinder or withdrawal valves.
- If you are stopping work for a longer period of time or if you have finished work, you must also release the pressure in the hoses by opening the burner valves. Then relieve the pressure regulators by loosening the T-screw or hand wheel. Once you have done this, close the burner valves again.

## 6. Troubleshooting.

Problem	Solution
The appearance and sound of the flame changes, possibly accompanied by a rise in the burner's temperature	Use the valves on the burner handle to adjust the flame. Check gas pressure levels if the problem occurs again. If pressure levels are too low, check whether your gas reserves are sufficient. Avoid heat accumulation and/or reflection of the secondary flame on the burner head. In the case of mixture-cooled burners, the operating pressure must not fall significantly below the required level.
The flame extinguishes with a bang and the burner starts to whistle	Immediately close the acetylene valve, and then close the oxygen and/or compressed air valve. Once the flame has gone out, allow the burner to cool. <b>Before you reignite the burner, check the following:</b> <ul style="list-style-type: none"> <li>• That the seals in the mixer area, for example, the O-rings, are not damaged</li> <li>• That the coupling nut between the burner handle and the mixing pipe is tight</li> <li>• That all screw connections between the mixer nozzle and the burner head are tight</li> <li>• That the gas outlet bores are not contaminated, blocked or closed</li> <li>• That the gas intake is not blocked or damaged</li> </ul> <b>If screw connections on the burner and nozzles are loose or any damage has been caused by flashback (for example melting at the mixing point or nozzle blockages), the burner must be repaired by qualified personnel. Do not continue to operate a damaged burner.</b>
The flame backfires, possibly accompanied by a continuous crackling sound	This may be caused by a sudden blockage of nozzle bores and possibly followed by the burner intermittently purging or overheating. Increase the distance between the burner and the surface you are working on. This will reduce the risk of a blockage and excessive overheating. Check that the gas can exit unimpeded from the nozzle bores. If gas cannot exit unimpeded, the burner must be cleaned by qualified personnel.

# 7. Maintenance, storage, servicing and repairs.

LINDOFLAMM acetylene special burners must be handled with care and always stored in such a way as to prevent damage and contamination. Ensure that all thread and sealing components are in perfect working order and that the pressure nozzle is tight.

The burners should be stored in a dust- and moisture-free environment at temperatures between +5°C and +35°C.

The burner head must be cleaned carefully by qualified personnel. Never re-bore gas outlets.

For safety reasons, LINDOFLAMM acetylene special burners should be inspected for damage, contamination and leaks at regular intervals.

The 'Safety instructions' described under section 1.2 must be observed during all servicing and inspection work.

Only qualified personnel authorised by Linde AG may carry out repairs to LINDOFLAMM acetylene special burners. The manufacturer is not liable for damage resulting from unauthorised repairs or alterations carried out by the user or third parties without the manufacturer's permission.

## 8. Information on the manufacturer/ copyright and contacts.

LINDOFLAMM acetylene special burners are manufactured by

AGA in Region Europe North

Please contact your local supplier for more information.

The copyright for this manual is the sole property of

**Linde AG**

Linde Gases Division

Seitnerstrasse 70

82049 Pullach, Germany

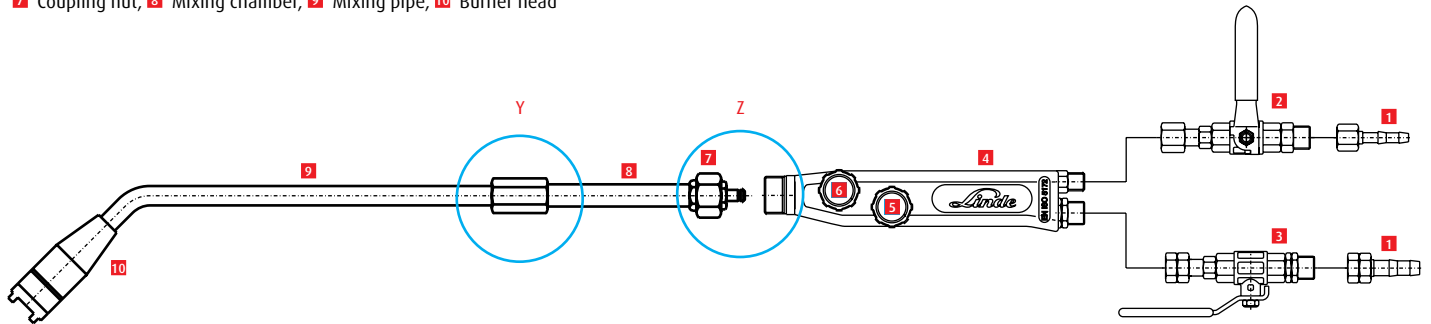
This operating manual is intended for operators and supervising personnel. It contains instructions, diagrams and drawings, none of which may be used or made available to third parties without prior written consent from Linde.

For further information visit [www.aga.com](http://www.aga.com)


# 9. Appendix.

## 9.1 Parts diagram

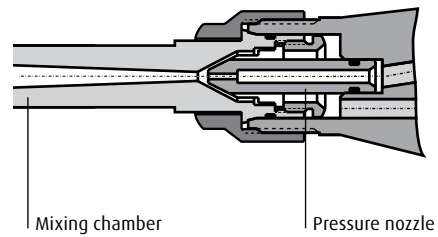
1 Hose coupling with union nut, 2 + 3 Quick-stop valves, 4 Handle, 5 + 6 Adjusting valves,  
7 Coupling nut, 8 Mixing chamber, 9 Mixing pipe, 10 Burner head



### Detail Y Identification/labelling

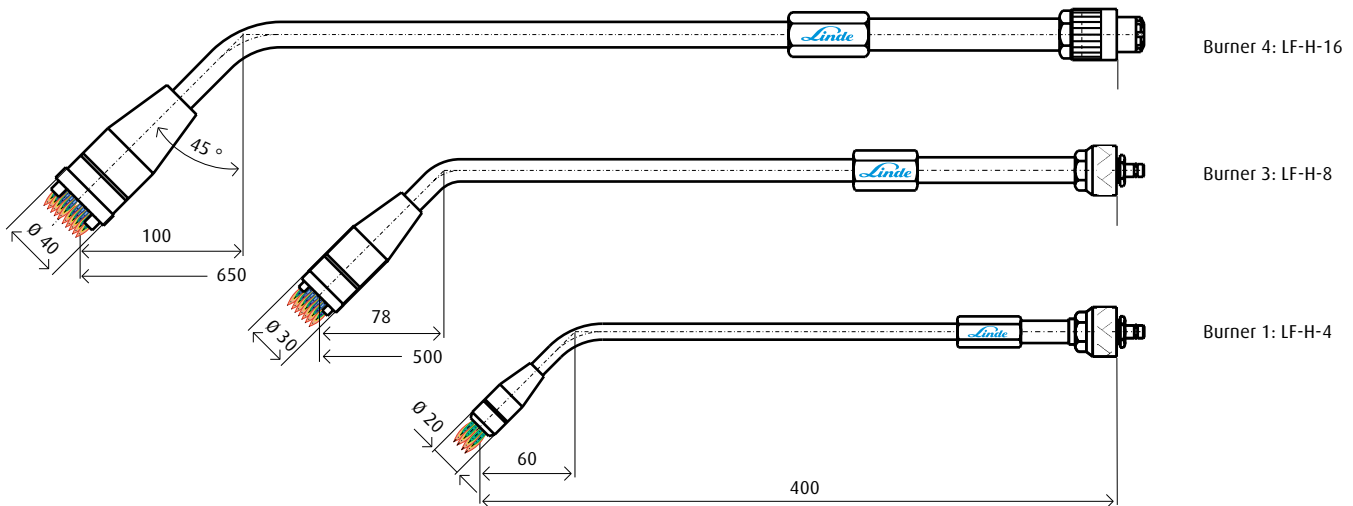
LINDOFLAMM®	= Registered trade mark
LF-H-8	= Burner size
571	= Burner number
A-0	= Combustion gases
0 = 3.0bar	= Rated oxygen pressure
	= Backflow resistance

### Detail Z





## 9.2 LINDOFLAMM acetylene special burner datasheet (LF-H-4, 6, 8 and 16)



### Burner description

High-performance burner (manually guided)

### Specifications

Burner	Burner size	Gases	Operating pressure bar*	Consumption m <sup>3</sup> /h	Connecting thread inches	Hose nominal bore	Handle
1	LF-H-4	Acetylene	0.8	1.4-1.9	3/8" LH	9.5	LF-S-3-H
		Oxygen	2.5-3.5	1.6-2.2	1/4" RH	6.3	
2	LF-H-6	Acetylene	0.8	3.3-4.5	3/8" LH	9.5	LF-S-3-H
		Oxygen	2.5-4.0	3.8-5.2	1/4" RH	6.3	
3	LF-H-8	Acetylene	1.0	5.0-7.1	3/8" LH	9.5	LF-S-3-H
		Oxygen	2.5-4.0	5.8-8.9	1/4" RH	6.3	
4	LF-H-16	Acetylene	1.2	12.4-15.9	1/2" LH	12.5	LF-S-4-H
		Oxygen	3.5-5.0	14.3-18.3	3/8" RH	9.5	

\* measured at burner inlet

### Description

#### Application

- Heating applications for large workpieces
- Flame-straightening of thick plates including heat lines
- Thorough heating of heat wedges (s > 30mm)
- Fusing flame-sprayed coatings
- Heat-shaping of thick-walled plates, pipes and profiles

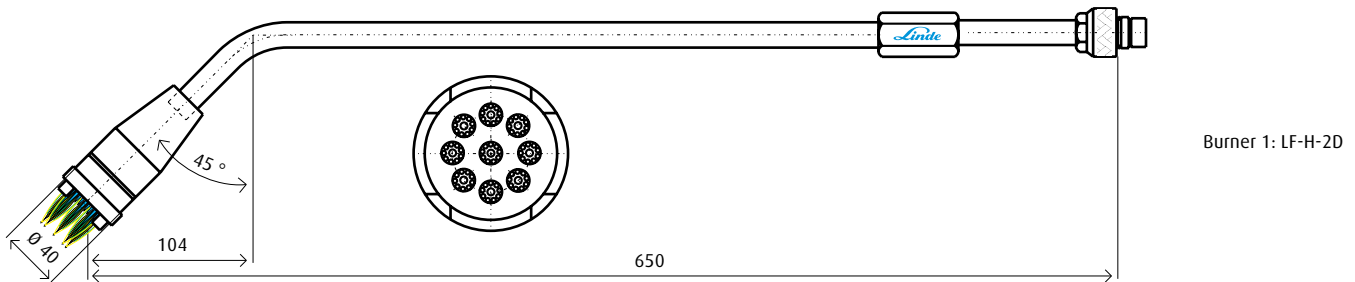
#### Design

- Angled design with reinforcement between mixer and feeder shaft
- Gas-cooled burner
- Injector with O-ring seals for tight fit
- Brazed components for extra strength

#### Extension options

- Quick-stop valves for safe operation and reproducible flame adjustment

### 9.3 LINDOFLAMM acetylene special burner datasheet (LF-H-2D)



#### Burner description

Pre-heating burner (manually guided)

#### Specifications

Burner	Burner type	Gases	Operating pressure bar*	Consumption m <sup>3</sup> /h	Connecting thread inches	Hose nominal bore	Handle
1	LF-H-2D	Acetylene	0.6	0.8-1.7	3/8" LH	9.5	LF-S-2-H
		Compressed Air	2.5-4.0	5.6-11.9	3/8" RH		

\* measured at burner inlet

#### Description

##### Application

- Heating to temperatures of up to 500°C
- Pre-heating of workpieces for welding
- Drying welding areas
- Maintaining interpass temperatures

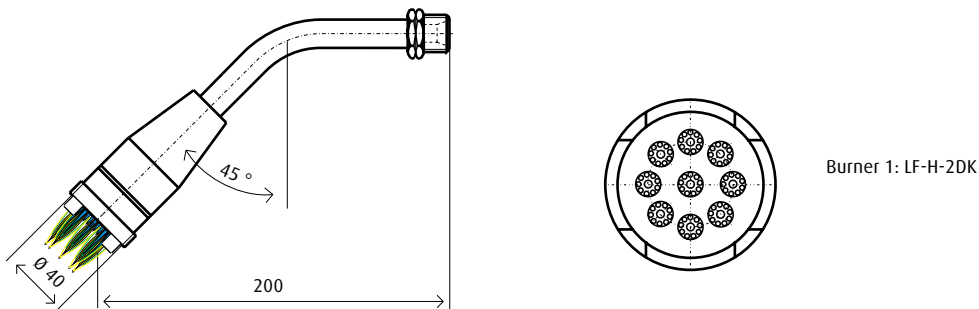
##### Design

- Angled design with reinforcement between mixer and feeder shaft
- Gas-cooled burner
- Metal injector with O-ring seals for tight fit
- Brazed components for extra strength

##### Extension options

- Quick-stop valves for safe operation and reproducible flame adjustment

## 9.4 LINDOFLAMM acetylene special burner datasheet (LF-H-2DK)



### Burner description

Pre-heating burner head

### Specifications

Burner	Burner type	Gases	Operating pressure bar*	Consumption m <sup>3</sup> /h	Connecting thread inches	Hose nominal bore	Handle
1	LF-H-2DK	Acetylene Compressed Air	0.6 2.0-4.0	0.8-1.7 5.6-11.9	1/2" LH	- **	- **

\* measured at burner inlet \*\* can only be operated with additional equipment

### Description

#### Application

- Stationary heating to temperatures of up to 500°C
- Pre-heating of workpieces for welding
- Drying welding areas
- Maintaining interpass temperatures

#### Design

- Angled design with G 1/2" LH connecting thread
- Gas-cooled burner
- Heat-resistant set-down protector
- Brazed components for extra strength

#### Mandatory additional equipment

- Gas mixture distributor, feed with mixing chamber, handle or machine shaft

#### Extension options

- Ignition flame for safe burner start-up
- Quick-stop valves for reproducible flame adjustment

