EN
Instruction manual

Fuego® basic

Safety Enhanced Laboratory Gas Burner

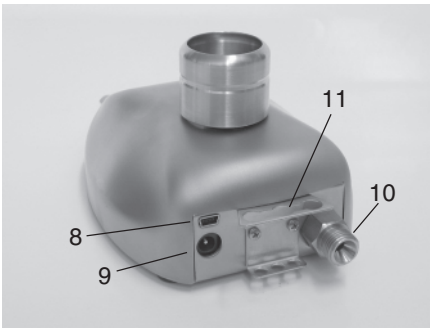
2 Jahre Garantie - 2 Years Warranty

73/23/EEC
89/336/EEC
CE
EN61326, 61000-3-2

DVGW GS geprüfte Sicherheit
DIN 30665, part 1

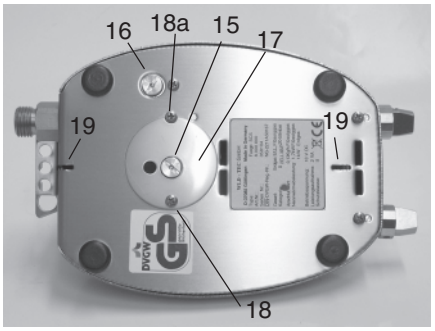
1 - Function knob
2, 2a - Dual knob: 2 - Gas adjustment
2a - Air adjustment
3 - LED Standard
4 - LED StartStop
5 - LED Button
6 - LED Burner head HOT / BHC
7 - Burner head
7a - Flame orifice

8 - Connector for foot pedal
9 - Power connector for 9 V DC
10 - Gas inlet R 1/4“ L
(left hand thread)
11 - Holding device for
inoculation loop holder



12 - Burner head screw
13 - Monitor electrode
14 - Ignition electrode

15 - Active nozzle
16 - Nozzle holder for
alternative gas
17 - Cover of the burner
shaft
18 - Retaining screw for
cover of the burner shaft
18a- Position screw for the
cover
19 - Guide slots for
tilt adjustment



Read these instructions carefully to familiarize yourself with the product. Please retain these operating instruction for future reference.

Use: Safety laboratory gas burners for heating and flame sterilizing. Ideal for use in cleanroom workbenches and the laboratory.

WARNING: DO NOT LEAVE THE ACTIVATED LABORATORY GAS BURNER UNATTENDED!

SAFETY PRECAUTIONS:

- **On unpacking the unit, check for possible transportation damages. Do not operate the unit if damages are visible.**
- **After use or for any longer period of time without attendance, turn the main gas supply off and turn off the gas burner at the function knob (1).**
- **Pay attention to your relevant rules for using liquid gas.**
- **Only use DVGW safety tubings with thread or tubing connectors. Check the condition of the tube/hose frequently. Depending upon type of tube/hose, hose clamps are required.**
- **All gas connections must be adequately tightened with two wrenches. Ensure gas proofness with a suitable test fluid / equipment. DO NOT seal the swivel nut with Teflon tape etc.**
- **Keep hands or other parts of the body away from the burner orifice (7a).**
- **Do not operate the unit near flammable liquids or hazardous materials.**
- **Unattended operation of the unit is not permissible.**
- **Always work in a well-ventilated area.**
- **Note that the burner orifice (7a) remains hot after the flame has been extinguished. Do not touch. Can cause burns.**
- **Allow sufficient time for flame orifice (7a) to cool down prior to cleaning, desinfecting, servicing or transport. Ensure that the unit and the gas supply are turned off.**
- **Because of the connectors at the back of the unit the backside should not be sterilized with a flame.**
- **Allow sufficient time for burner head (7) to cool down prior to disassembling.**
- **Operate the unit with assembled burner head only.**
- **After cleaning the burner head (7) allow sufficient time to dry before assembling again.**
- **Keep substances away from the flame orifice.**
- **Before mounting a nozzle check the O-Ring (20). Replace the sealing if damaged or worn.**

The range: Fuego SCS basic **Art.-No. 8.001.000**

with foot pedal
3 standard-programs for button (function knob) and foot pedal
SCS (Safety Control System)
BHC (Burner Head Control)
Removable and decomposable burner head
Tilt mechanism, right / left **(23)**
Holding device for 3 inoculation loop holders
Nozzles for natural gas, propane/butane gas
Turbo flame
Wrench 17 mm **(21)** for gas connection
Screwdriver **(22)** for burner head and cover of the burner shaft
Tubing connector with swivel nut **(24)**
Power connection
Instruction manual and 2-year warranty

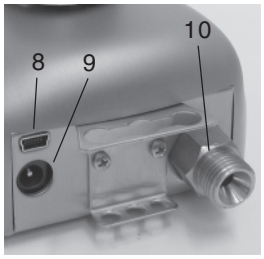
1. Setup Procedure:

The unit is shipped with the nozzle for natural gas (N) installed.
The nozzle must be changed if other gas is to be used.
Replacement procedure: Remove the Nozzle **P** from the nozzle holder **(16)** with a coin or the edge of the wrench **(21)** by turning it counterclockwise. Remove the active Nozzle **N** for natural gas **(15)** in the same way and exchange the nozzles.
ATTENTION: Before mounting a nozzle check the O-Ring (20). Replace the sealing if damaged or worn (Art.-No. 8.000.010).

Now you are ready to connect the gas supply to the gas inlet **(10)**.
The correct pressure for natural gas is within the range of 18 - 25 mbar, for propane/butane gas 28 - 57 mbar.
Only use DVGW or other gas approved safety tubings with thread or tubing connectors **(24)**. Check the condition of the tube/hose frequently. Depending upon type of tube/hose, hose clamps are required.

All gas connections must be adequately tightened with the wrench **(21)** (SW 17mm, included). Ensure gas proofness with a suitable test fluid / equipment. Do not seal up the included tubing connector **(24)** and swivel nut with Teflon tape etc.

A DVGW-proven or other gas approved pressure regulator (50mbar) must be used for liquid gas.
Pay attention to your relevant rules for using liquid gas.



1.1 Foot pedal connection:

Insert the connection cable of the foot pedal into the socket **(8)** at the back of the unit.

<u>Note:</u> The LEDs Standard (3) and Start-Stop (4) will flash alternately until a foot pedal has been connected to the foot pedal socket (8).

1.2 Electrical connection:
Insert the power cord into the socket **(9)** on the back panel of the unit, or into the socket of the foot pedal. The default supply must be connected to a voltage source of 100 - 240 V / 50/60 Hz.

2. Operation: Flame regulation
The flame can be varied in size and intensity by turning the gas knob (**2**) and adjusting the air knob (**2a**) to suit all requirements.
Attention: When operating the unit for the first time or after changing the nozzle, turn the gas adjustment knob (**2**) two revolutions to the left and turn the air adjustment knob (**2a**) 3-4 revolutions to the left, too.

2.1 Operation: On-Off switch, operating mode
Switch the unit on by a short push on the function knob **(1)**. It can be turned off by a long push (2 seconds +) on the function knob. By turning the function knob **(1)** the foot pedal operating modes “Standard“ and “StartStop“ or the operating mode “Button“ can be choosen. The corresponding LED lights up.

2.2 Operation: Application programs
- BUTTON StartStop: The flame is ignited by operation of the function knob **(1)**. The flame is extinguished after renewed actuation of the function knob **(1)**.

- PEDAL Standard:
The flame is ignited by operation of the foot pedal. The foot pedal remains depressed for the duration of use. The flame is extinguished upon release of the pedal.

- PEDAL Start-Stop:
The flame is ignited by operation of the foot pedal. The flame is extinguished after renewed actuation of the foot pedal. Additionally the flame is automatically extinguished when the burning timer has expired after 60 min. Alternatively the flame can be extinguished by a short push on the function knob.

Note: The LEDs Standard (3) and Start-Stop (4) will flash alternately until a foot pedal has been connected to the foot pedal socket (8). Without foot pedal, operation is possible with application program BUTTON StartStop only.

2.3 Operation: Switch-off
The unit can be turned off by pushing the function knob **(1)** for more than 2 seconds.

3. Safety symbols and safety functions:
- Residual heat display: LED “Burner head HOT / BHC“ ≀≀≀ indicates a hot burner head.
Attention: If the LED “burner head HOT / BHC“ lights up DO NOT TOUCH the burner head. Can cause burns! Even after switching-off the unit the residual heat LED remains on till the burner head is cooled down.
Notice: Disconnecting the power supply or removing the power cord will clear the residual heat display even if the burner head is still hot.

- BHC: If the burner head is clogged the amber LED “Burner head HOT / BHC“ will flash. Additionally, if “burner head HOT / BHC“ is flashing, the maximum burning time in the operating mode “Button“ and Pedal “StartStop“ is limited to 30 seconds **(see paragraph 2.2)**. If burning times longer than 30 seconds are required in case of a clogged burner head, the operating mode “Standard“ can be used without time limit.
If “burner head HOT / BHC“ is flashing it is requested to clean the burner head immediately **(see paragraph 5.1)**.

- Automatic unit switch off: The unit switches itself off automatically after 4 hours if the flame has not been lit in this period. All indicated malfunctions are automatically switched off after 4 hours, too. For further operation, switch the unit on again.

4. Error displays:

- Ignition failure: Green LED "Button", "Standard" or "StartStop" blinks 2x
This signal appears and indicates a malfunction if the flame fails to ignite after 7 seconds. In case of ignition failure check the burner head **(7)** for possible clogging, check the correct input pressure of the gas supply and verify that the correct nozzle is installed.
In case of this malfunction the gas supply will be shut off automatically.
Nozzle **N**: natural gas, 18-25 mbar Nozzle **P**: propane-/ butane gas, 47-57 mbar

- Flame failure: Green LED "Button", "Standard" or "StartStop" blinks 3x
This signal indicates a malfunction if the flame is extinguished by external factors and fails to reignite within 5 sec. In case of flame failure check the burner head **(7)** for possible clogging and verify the correct input pressure of the gas supply.
In case of this malfunction the gas supply will be shut off automatically.

- Overtemperature: Green LED "Button", "Standard" or "StartStop" blinks 4x
This signal indicates a malfunction if the interior temperature has exceeded 70 °C. At a normal room temperature with normal air circulation the unit is suited for continuous operation.
In case of overtemperature increase the air ventilation or change the operation site.
In case of this malfunction the gas supply will be shut off automatically.

- Burner head assembly monitor: Green LED "Button", "Standard" or "StartStop" blinks 5x
This message indicates that the burner head is removed. Further operation is possible after the burner head is reinstalled.

- BHC: Amber LED "burner head HOT / BHC" flashes
This signal indicates that the time limit (30 seconds) is turned on in operating mode "StartStop" and "Button" due to a clogged burner head. For cleaning the burner head **see paragraph 5.1.**

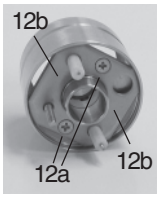
Notice: All error displays can be reset by a long push (2 seconds+) on the function knob **(1)**. (In case of overtemperature the unit needs to be cooled down and in case of burner head assembly monitor the burner head needs to be reinstalled prior a reset is possible.)

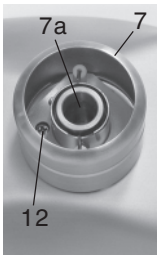
5. Cleaning and sterilizing:

Allow sufficient time for burner orifice (**7, 7a**) to cool down before disassembling or cleaning the burner head. Check the unit is disconnected and that the gas supply is turned off at the mains. The burner can be cleaned with customary commercial disinfectants. Additionally, it is possible to remove the burner head and to clean it separately.
The stainless steel and glass construction allow 100% UV-radiation sterilization and short time surface flame sterilization.
Attention: Because of the connectors at the back of the unit the backside should not be sterilized with a flame.

5.1 Burner head disassembly and cleaning:

Allow sufficient time for burner orifice (**7,7a**) to cool down before disassembling or cleaning the burner head. Check the unit is turned off, that the gas supply is turned off at the mains. Clean the burner head with customary commercial disinfectants, sterilize it in an autoclave or wash it in a dishwasher. To remove the burner head proceed as follows:
Unscrew the burner head screw (**12**) completely with

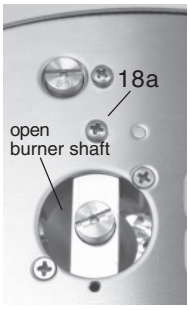




the included screwdriver. Turn approx. 8 revolutions to the left. Now remove the burner head from the device by pulling it upwards. Reinstallation is performed in the reverse sequence. The dismounted burner head can be even dismantled into the individual components for in-depth cleaning: Unscrew both screws **(12a)** and take off the base plate **(12b)** of the burner head which was fixed by the two screws **(12a)**. After the base plate is removed both electrodes can be pulled out for seperate cleaning. Reinstallation is performed in the reverse sequence.

5.2 Burner shaft cleaning:

Unscrew the screw **(18)** completely with the included screwdriver. Take off the cover **(17)** of the burner shaft. Now the burner shaft can be cleaned or solid substances which have fallen into the unit can be removed. Reinstallation is performed in the reverse sequence. Take care that the notch of the cover fits to the screw **(18a).**

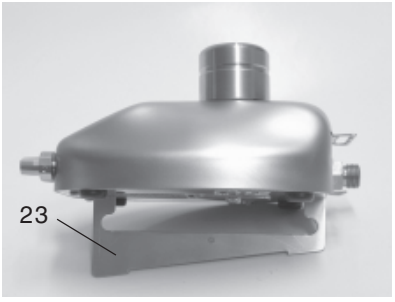


6. Turbo flame:

If the cover of the burner shaft **(17)** is removed the flame is extremely firm and consistent.
To take off the cover of the burner shaft unscrew the screw **(18)** completely with the included screwdriver.
With an open burner shaft the intensity of the flame cannot be adjusted by the air knob any longer. During the use of the turbo flame most of the needed air is taken inside through the open burner shaft. Remounting the cover of burner shaft. **(see paragraph 5.2)**

7. Tilt adjustment:

Insert the tilt adjustment **(23)** into the slots **(19)** at the bottom of the unit. The tilt-adjustment can be used to the left or right side to protect the burning chamber from contamination when working with liquids.



8.Warranty:

All Fuegos are covered under our two-year manufacturer warranty against any manufacture defects in material and workmanship. The WLD-TEC warranty guarantees all Fuegos under normal usage conditions and does not cover any damages as a direct result of user misuse or/and abuse. The warranty is void upon any unauthorized servicing, disassembly or modifications.

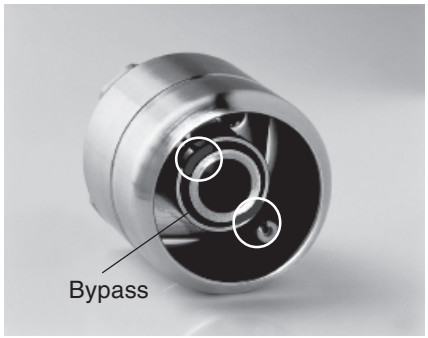
Troubleshooting guide

The green LED "Standard" or "StartStop" does not light up
Check for correct connection and specification of the power adapter.
Ensure that the original power adapter is used.
Specifications: 9 V / DC, 1A Polarity: + — ⊙ — -

The foot pedal does not work
Check for correct connection of the foot pedal.
Ensure that the foot pedal socket and plug is not twisted or broken.

No Flame
In case of ignition or flame faliure check if the burner head is clogged. Verify the input pressure of the used gas. Ensure that the correct nozzle is installed in the unit.
Nozzle **N**: natural gas, input pressure: 18-25 mbar
Nozzle **P**: propane / butane gas, input pressure: 47-57 mbar

LED "Burner head HOT / BHC" flashes / Inspection of the burner head (clogging)
Take care that there are no liquids or other substances at the Bypass (area between the inner and the outer ring)
Especially remove substances in the marked areas at the electrodes. If there are contaminants in this area, the flame cannot encircle the electrodes correctly.



Clean this areas with a brush. The burner head can be cleaned with customary commercial disinfectants, or it can be sterilized in an autoclave or washed in a dishwasher.

In operating mode "Button" or Pedal "StartStop" flame burns 30 seconds, only
BHC time limit is active, LED "burner head HOT / BHC" is flashing. The burner head is clogged and must be cleaned **(see paragraph 3 and 5.1)**.

Flame too small / large / soft
Check the position of the air and gas adjustment.
Check if the correct nozzle is installed.
Nozzle **N**: natural gas, 18-25 mbar
Nozzle **P**: propane / butane gas, 47-57 mbar
Check if the drilling of the active nozzle is blocked. Unscew the active nozzle. **(see paragraph 1)** If the drillig is blocked clean with a brush or compressed air.

No ignition spark / LED "Burner head HOT / BHC" flashes but the burner head is clean
Check if the ceramic electrodes are in good condition. In some cases the electrodes may break. To check move the ends of the electrodes. If they are not moving they should be okay. If they are moving more than 0.5 mm the electrodes are broken. The electrodes can be dismantled and changed by the user. **(see paragraph 5.1)**

The burner shuts-off due to overtemperature frequently
In case of overtemperature increase the air ventilation or change the operation site.

Green LED "Button", "Standard" or „StartStop" blinks 2x
Ignition failure **(see paragraph 4)**

Green LED "Button", "Standard" or „StartStop" blinks 3x
Flame failure **(see paragraph 4)**

Green LED "Button", "Standard" or „StartStop" blinks 4x
Overtemperature **(see paragraph 4)**

Green LED "Button", "Standard" or „StartStop" blinks 5x
This message indicates that the burner head is removed or not mounted correctly. Reinstall burner head and reset the unit by a long push on the function knob **(1)** **(see paragraph 4)**.

Amber LED "Burner head HOT / BHC" is on permanently
Residual heat display is active. Attention: DO NOT TOUCH the burner head **(see paragraph 3)**.

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Technical data:

Technology	Microprocessor

Programs

Foot pedal:	Standard (flame during pressed foot pedal) Start-Stop with timer, 60 min
Button:	Start-Stop with timer, 60 min

Safety features

Safety Control System (SCS): with gas safety cut off	ignition and flame control, temperature monitor burner head clogging and assembly monitor (BHC) automatic unit switch off, 4h residual heat display

Gas supply and consumtion

Gas supply:	1/4“ left + filter
Gas types:	$II_{2ELL3B/P}$: natual gas E/LL,18 - 25 mbar liquid gas, 20 - 50 mbar
Connected load:	70 g/h liquid gas
Continuous cartridge operation:	CV 360 - 40 min, Express 444 - 50 min, CG 1750 - 150 min, C 206 - 170 min, CP 250 - 210 min, CV 470 - 370min

Temperatures

Flame temperature:	1350 °C on liquid gas 1300 °C on natural gas (E)
Temperature threshold level:	1 kW liquid gas, 1 kW natural gas

Electrical

Power consumption:	2 VA
Power connection:	100 - 240 V / 50/60 Hz / max. 0.3 A 9 V DC / 1 A

Mechanical

Casing and operating controls:	stainless steel / glass, UV and solvent resistant
Burner head:	removable and decomposable, stainless steel
Cover of the burner shaft:	Ø 23 mm, with drains
Measurements (B x H x T):	103 x 49 x 130 mm
Weight:	700 g

Licences

DIN-DVGW Reg.-No.:	NG-2211AS0167
CE:	EN 61326-1, EN61000-3-2, EN 61010
EEC guidelines:	89/336/EEC und 73/23/EEC

CE

Declaration of Conformity
Following the Directives 89/336/EWG (EEC) and 73/23/EWG (EEC)

Electronic Laboratory gas burner
Fuego SCS basic Typ / type 8.001.000

This declaration relates is in conformity with the relevant provisions of the following standards together with the normative document A1 mains connection.

1. **Electromagnetic Compatibility Directive**

1.1 EN 61326-1 A1/A2/A3 Electrical equipment for measurement, control and laboratory use, EMC requirements

Generic Emission Standard: Electrical Equipment, class B, table 4

Generic Immunity Standard: Industrial areas, continuous, unmonitored operation

1.2 **E**EN61000-3-2:2000 Limits for harmonic current emissions, class A

2. **Security of electrical resources**

EN 61010 Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 1: General requirements

B.Wartewig
Geschäftsführer
Manufacturer

Göttingen, 09/28/2005

Notes

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10/08