

Anderson Thermal Solutions (Suzhou) Co., LTD

FHO96 Forehearth Oxygen Operation Manual

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This manual has been written for those who are already familiar with all aspects of nozzle mix burner and its add-on components. Main contents of the manual including safety rules, burner installation, commissioning, operation parameters, maintenance and troubleshooting, spare parts, etc.

1. Disclaimer Notice

Anderson Thermal Solutions (Suzhou) Co., Ltd. reserves the right to change the construction and/or configuration of our product at any time without informing customers.

If the product or its individual modules are used for purposes other than the designated purpose, their effectiveness and suitability must be confirmed.

Anderson warrants that the product itself will not infringe any patents. Every effort has been made to make this manual as accurate and complete as possible. If you find errors or omissions, please contact us so we can correct them.

2. Liability And Warranty

Due to negligence, breach of warranty or other reasons, Anderson's liability for its products is limited to the provision of such replacement parts and will not be liable for any other injury, loss or expense, whether direct or indirect, including but not limited to Loss of or damage to the use of materials that sell, install, use, fail to use or repair or replace Anderson related products.

The warranty is void if: any operation explicitly prohibited in this manual, any adjustment or assembly process not recommended or authorized.

3. Safety Guide

Only those who were trained and qualified person can follow the manual to operate or adjust the combustion system. The fire was prohibited within a radius of 5 meters of the combustion system. Flame, non-covered light sources or heat sources shall not be brought to the combustion area unless it is related to the process. Welding in combustion control area shall be approved to ensure the safety in the area and also preventive measures should be taken into consideration.



Before starting, the operator must confirm whether the burner and gas pipeline are in normal working condition, and there is no flammable substance around the burner. The burner must be operated with fuel and oxygen or air. The ignition and operation of the burner must be performed at the specified position. The burner has been correctly and safely installed before ignition. The ignition of the burner needs to be performed after the combustion chamber is purged. If it is ignited at a low temperature, it needs to be replaced with 5 times the volume of the combustion chamber to avoid explosion.

However, it is not necessary to purge when the temperature is higher than 750°C. Air pipe or gas pipe connected with burner should be tight enough with no leakage, also the periodically check air or fuel nozzles of the burners to prevent to be blocked by dust, slag or other materials.

ATTENTION: DANGER OF BEEN BURNT



When burner in operation, combustion is severe, so the burner must be fixed. Hoses or cables in area of the combustion system must be suitable for high temperature, to prevent high temperature failure or cause safety accidents. Burners should be periodically inspected and cleaned. Copper wire brush may be used, if necessary, to clean burner head. The burner system should be checked twice a year for safety operation.

4. Fuel Information

The following table shows that the combustion involves common gas properties, and the operators should strictly abide by the safety regulations. Information is provided by the fuel supplier.

Fuel	Natural gas
Lower Calorific value	$H_U=35,900 \text{ [kJ/m}^3\text{]}$
O ₂ -requirement	2.03 O ₂ m ³ / NG m ³
Composition	>98% CH ₄
Reference conditions	1,013.25 mbar, 0°C

5. Brief introduction

The FHO96 Series Forehearth Oxygen is product of Anderson Thermal Solutions (Suzhou) Co., Ltd. It is designed for glass forehearth, high performance product, suitable for high quality fiberglass production. Robust and High temperature resistant.

The FHO96 Series Forehearth Oxygen burner is for combustion systems with an operating temperature of 800 -1400° C.

5.1 Burner Data

FHO96 series burners operation datasheet shown as Table 1:

Table 1: FHO96 Series Burners Operation Datasheet

Model	Input capacity kW	Gas Flow (NM ³ /H)		Gas Pressure (mbar)		Oxygen Flow (NM ³ /H)		Oxygen Pressure (mbar)	
		Min	Max	Min	Max	Min	Max	Min	Max
96G05	1-10.0	0.1	1.0	2.5	75	0.2	2.0	2.5	75
96G10	2-20.0	0.2	2.0	2.5	75	0.4	4.0	2.5	75

5.2 Burner Adjust

Open the oxygen ball valve first, and then open the gas ball valve when the forehearth oxygen burner is operated. When the burner is closed, first close the gas ball valve, then close the oxygen ball valve, and pull the burner out of the burner block to avoid the high temperature in the furnace to damage the burner.

5.3 Burner Dimension

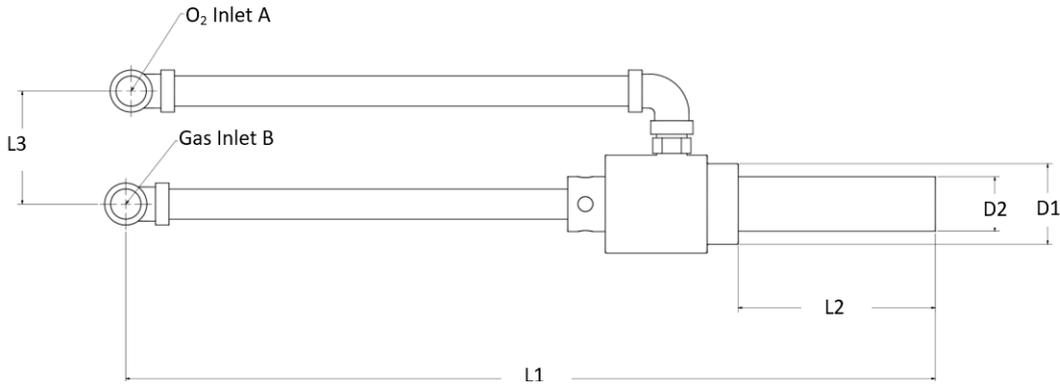


Figure 1: FHO96 Series Forehearth Oxygen Burner

Model	D1	D2	O ₂ Inlet	Gas Inlet	O ₂ hose	Gas hose	L1	L2	L3
96G05	36	25	1/4"	1/4"	3/8"	1/4"	421	89	40
96G10	36	25	1/4"	1/4"	3/8"	1/4"	421	89	40

6. Burner maintenance

Burners require routine inspection. Examination after the first operation or long shut down is particularly important.

For the first use, check that the seal of each interface is tight and no leak. After the burner is first used normally, the burner needs to be checked.

Anderson Thermal Solutions suggested that the burner to be checked out at least once a month. Each inspection requires pull the burner out of the burner block.

To check whether the burner's gas nozzle is blocked and carbon deposits, if so, it needs to be cleaned, check whether the oxygen nozzle is burned, if so, it needs to be replaced.

7. Spare part

For normal use and regular maintenance of the burner, we recommend preparing the following parts:

Gas nozzle: 60ZZ0780A

Oxygen nozzle: 60ZZ0779A

8. Appendix

8.1 Training Record

Each trained person must verify that he has read and understood the contents of the operating manual and know how to operate and maintain this series of burners correctly.

Manual Number and Revision	Date	Who (Name)	Signature

8.2 Bi-annual Audit Record

Routine audit must be made every 6 months. Please sign the following table.

Function Audit	Date	Inspector	Problem description	Next Audit Time
Flame sensor state				
air and gas pressure				
Alarm signals				
igniter electrode				
Control motors				
Ventilate equipment				
Interlock Function				
Shut off cock function				
Combustion air blower				

8.3 Annual Audit Record

Yearly audit list as follow but not only included

Function Audit	Date	Inspector	Problem description	Next Audit Time
Leak test				
Pressure switch test				
Cable and connectors				
Burner bodies and air wings				

Attention: Safety audit is prohibited when burner is running, otherwise, an accident could be caused!



If you have any questions. Please call us or send an e-mail to get more information

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Our email address is: info@andtecs.com

Meanwhile, you can also visit our website www.andtecs.com to get more product information.