Anderson Thermal Solutions (Suzhou) Co., LTD

PBO92 Burner Operation Manual

No：	ATS–Operation Manual–PBO92
Subject:：	PBO92 Burner Operation Manual
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Author ：	Wilson Sun
Review ：	David

CONTENT

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 configuation 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.

Burner commissioning shall take care of ignition position, minimum and maximum output position. Following interlocks will cause emergency stop, including gas low pressure, high pressure or low combustion air pressure, as well as emergency stop is trigged, the main power is out, UV signal failure or kiln safety conditions (such as high temperature limit, flue system opening, etc.) will cause the burner lockout. Users need to know the maintenance interval recommended by the manufacturer and the interval specified by national laws, whichever is shorter.

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 [kJ/m^3]
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 PBO92 Series Oxy-Gas Pilot burner is patented by Anderson Thermal Solutions (Suzhou) Co., Ltd. for combustion control systems using oxy-gas.

The PBO92 Series Oxy-Gas pilot burner is made of stainless steel with an operating temperature not above 1300 ° C. This burner is designed without spark plugs, with mounting port for flame detectors at burner back.

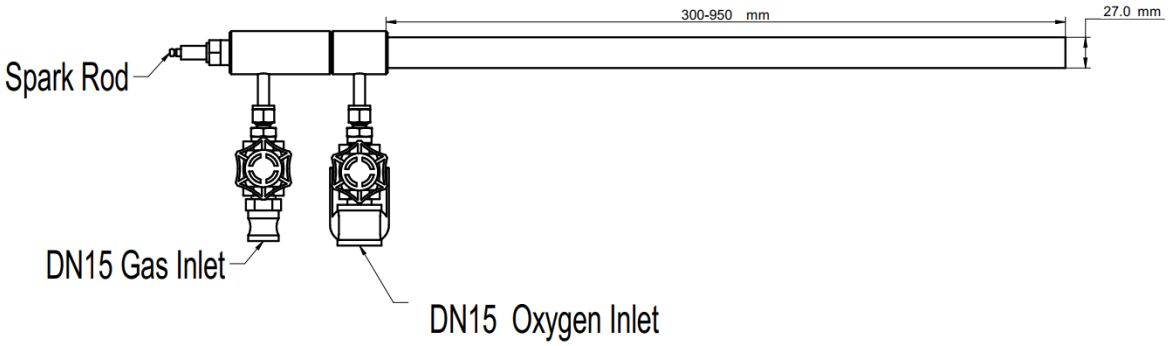

Figure 1: PBO92 Series air burner

Attention!
1. When the burner is stopped, only the gas supply shall be cut off, and the combustion auxiliary air should not be cut off immediately. If the combustion auxiliary air is interrupted for more than 5 minutes, the burner should be removed to prevent damage to the burner and the flame detector. 2. When the gas is not completely closed, do not remove the gas metal hose or the locking device

5.1 Burner Data

Burner Type	Input kW	Burner OD (mm)	Burner Length (mm)	Gas Flow (Nm^3/h)		Gas Pressure (mbar)		Oxygen Pressure (mbar)	
				Min	Max	Min	Max	Min	Max
92G50	10-30	27	300-950	2	3	10	15	10	15

5.2 Burner Adjust

Fix the burner on position, ensure that the burner does not slide by external forces. Connect the burner oxygen hose to the combustion oxygen inlet. Connect the burner gas hose to the gas inlet. Open the combustion oxygen valve and test the pressure at 1-15 mbar, which should be properly adjusted according to the kiln pressure. Check and confirm that both the oxygen hose and the gas hose are correctly and firmly connected. Open the gas valve and adjust the gas flow regulating valve to ensure flame stability.

6. Burner maintenance

Burners require routine inspection. Examination after first or long absence are particularly important. For the first use, check that the seal of each interface is intact and not loose. After the burner is first used normally, the burner needs to be checked. The pilot burner is checked weekly in the first month, and at the second month, the inspection frequency can be extended to once in two weeks. Anderson

suggested that the burner check out at least once a month. Each inspection requires the inspection when the system is shut down and cool down to room temperature.

7. Spare part

For normal use and regular maintenance of the burner, we recommend preparing the following parts: **None**

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
Our telephone no. is +86 (512) 6592 4663
Our email address is: **info@andtecs.com**
Meanwhile, you can also visit our website www.andtecs.com to get more product information.