

Anderson Thermal Solutions (Suzhou) Co., LTD

FFA12 Series Burner Operation Manual

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Author :	Wilson Sun
Review :	David



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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 instructions

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. Description

FFA12 – FlexFire® Air burner is trademark of Anderson Thermal Solutions (Suzhou) Co., Ltd., it is designed for regenerative glass furnace, with adjustable mechanism for flame length and energy release position.

FFA12 fuel burner has an adjustable fuel burner designed for sealed combustion and can use standards-compliant liquid fuels with a viscosity of 100 SSU or less, long service life, work with heat and dirty air, and low maintenance.

It is widely used for the installation of side-fired and bottom-fired end port and cross fire furnaces

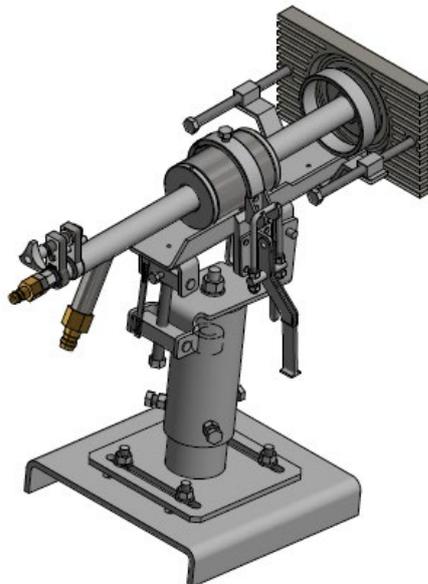


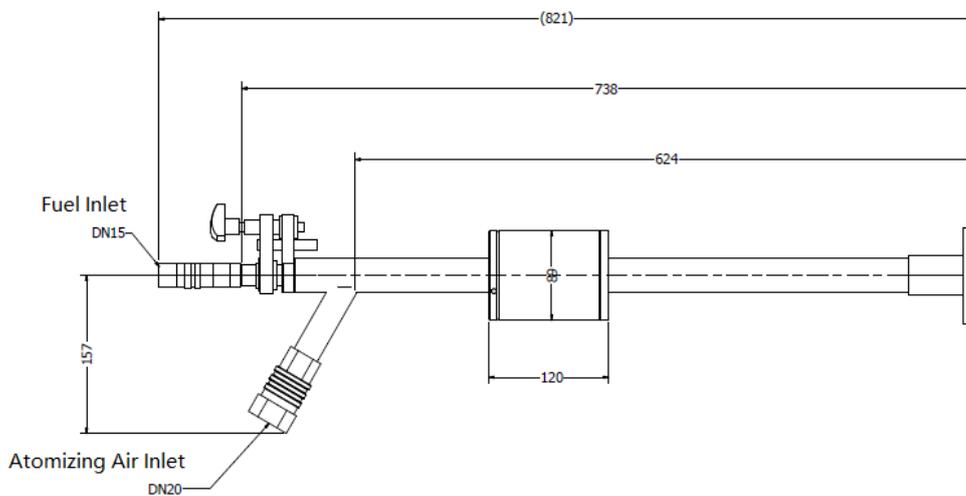
Figure 1: Flex Fire®-Air Oil Brenner

Attention!

- When the internal cooling air supply stops for more than 20 minutes, remove the burner and seal the seal plate. Prevent burner damage.
- External cooling air supply for a long time will cause damage to the sealing plate.
- To adjust the firing burner, loosen the corresponding fixing bolt and lock it again after the adjustment is completed
- Do not remove the metal gas hose or locking device when the gas is not completely shut down

4.1 Burner data sheet

Burner Model Number	Burner Input Gas MW	Fuel Flow (L/H)		Fuel Pressure Required @Burner (bar)		Atomizing air flow (NM ³ /H)	Atomizing air pressure (bar)	
		min	max	min	max	Recommended value	min	max
12L3000	0.6-3.0	60	300	0.5	3	30	1	3.5
12L6000	1.5-6.0	125	600	0.5	3	60	1	3.5

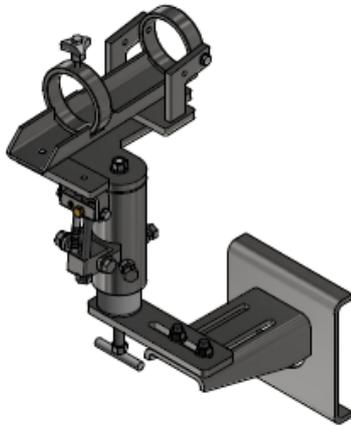


4.2 Installation of the burner

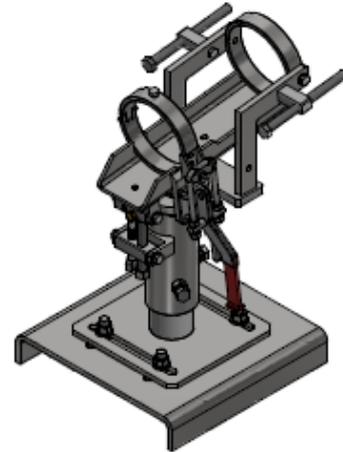
1. Preparation of the burner bracket

Before installing bracket, check all ruler positions, which should be in zero position; otherwise, loosen the fixing bolt first, and return ruler to zero. As shown in figure 2, adjust the bracket so that the four fixing bolts are in the middle position of the chute to ensure that the bracket can move forward, backward, left and right directions.

Note: the bracket used for side port and under port is difference



Side port burner bracket



Under port burner bracket

Fix the bracket to the steel structure. Install the seal plate to the burner block and tighten it with the retaining bolts. The positioning tube (to be purchased separately) is used to position the bracket so that the installation position of the bracket can ensure that the burner is concentric with the sealing plate and can be fitted with the sealing plate without gap. The bracket is fixed so that it cannot be easily moved.

The sealing plate shall provide external cooling air. It is recommended to use a 2" air duct with the nozzle inclined to the sealing plate to allow cooling air to blow through the entire sealing plate.

Attention!

- Gas and cooling air must be equipped with check valve, otherwise fire may occur.
- Lack of cooling air to Seal Plate may shorten the service life.

2. Install Burner

On the non-fire side, place the burner on the burner bracket, push forward the burner, make the burner tip seal tight to the seal plate, and secure the burner body with the bracket lock ring. Ensure burner do not move due to external forces. Connect the burner cooling air hose to the cooling air inlet. Connect burner gas hose to gas inlet. Before firing, assemble cooling air ball valve and test pressure at 0.3-0.5 bar. Otherwise, adjust the burner downcomer cooling air limit orifice valve or globe valve, set the pressure to meet the requirements.

3. Burner startup/stop

Startup

Place the burner on the burner bracket and clamp it, making sure that the end face of the outer nozzle of the burner tight touch the sealing plate. Connect the

fuel and atomizing air metal hoses to the burner, making sure the connections are correct.

Open the atomizing air (adjust it to about 2 bar), slowly open the fuel shutoff valve at burner downcomer until the fuel begins to flow, and adjust the oil flow control valve to obtain the required oil flow.

Note:

For the most suitable atomization of heavy oil, it needs to be preheated to make its viscosity reach 100 SSU or lower. If the viscosity of the oil is increased (or the temperature of the oil is lowered), the atomization effect will be worsened, the efficiency of the burner will be reduced, and at the same time, the nozzle may be clogged and carbon deposits.

After the burner is running, always check the flame angle and the connection of the burner.

Adjust the cooling air pressure of the burner located on the non-combustion side to about 0.3-0.5 bar

Stop

Before stopping the heavy oil pipeline system, it is necessary to flush the system with diesel several times (or slightly adjust the time according to the specific situation). After the burner purge is complete, stop and pull the oil burner.

5. Burner maintenance

5.1 Troubleshooting and troubleshooting

- Flame touches burner block or furnace refractory
Burner repositioning
- Thick smoke or oil mist during combustion
Venturi blocked
Amount of atomizing air not enough
High viscosity and low preheating temperature
- The flame is short and ring-shaped
Burner repositioning
- Flame length is too long
Reduce oil flow or increase atomizing air
- Flame length is too short
Increase oil flow or reduce atomized air

Note: In any of the above cases, the oil nozzle or high-pressure plate may be blocked. In this case, the burner must be removed and cleaned.

5.2 Inspection of the nozzles

The burner should be inspected regularly. This is especially important after a prolonged period of shut-down.

During the first month of operation of the burner, inspection of the nozzle must be carried out every week. During the second month, the period between inspections can be extended to two weeks. Anderson recommends that each nozzle is inspected at least once every month. Every time a burner is left in the furnace

6. Spare parts

With proper use and regular servicing of the burner, we recommend the following parts:

- Quick Coupler high temperature gasket
- Outer nozzle gasket
- Spare burner nozzle

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



If you have any question. Please call us or send 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.