

Installation Instructions

The burner is normally only a part of your complete combustion system. Additional pipe train accessories and control components will be required for a complete system installation.

Important: Do not discard packing material until all loose items are accounted for.

To prevent damage in transit, the burner insert and mounting gaskets may be packed separately and shipped loose.

OXY-THERM® Burners can fire in all directions. Avoid orientations which might permit an idle burner to collect debris.

Include observation ports in your design to provide a view of the flame area. This will simplify start-up and adjustment procedures.

Burner Mounting

The sketches at right show two possible methods of mounting and holding an OXY-THERM® Burner block and frame assembly in place. Alternate support methods are possible.

The primary focus is to compress the frame against the wall of the furnace and to support the weight of any system piping.

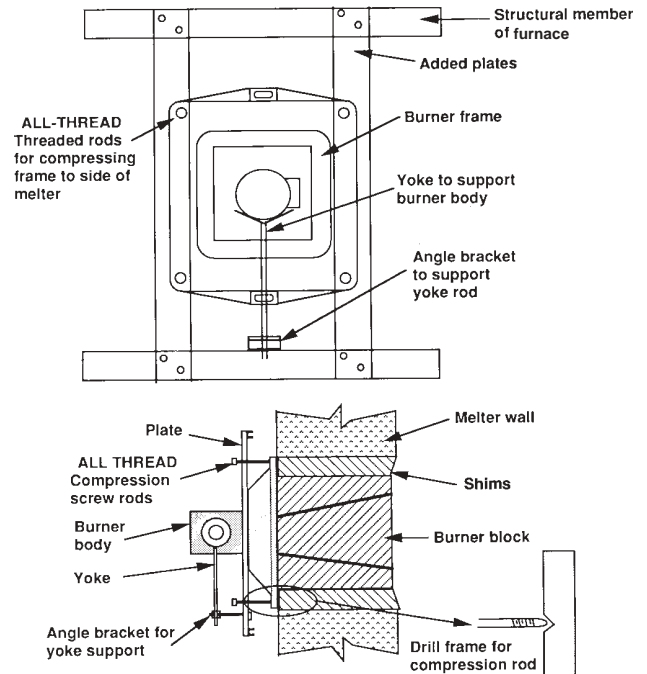
The burner block sits on the sill or wall. The burner block and frame weight should be supported and equally distributed. If burner port holes are too large, shims may be used to align the burner.

Burner block failure could result from external forces and stresses transmitted to the burner through the piping. **Under no circumstances should the burner be the only support for the piping.** Flexible connections are recommended in all piping to reduce piping stresses and alignment/shifting problems. Installation of such connectors at certain key spots in the oxygen or gas manifolding can prevent damage to the burners from uneven thermal expansion.

The opening in the furnace shell should normally provide 1/16" clearance on all sides. High temperature furnace sealant or gasketing should be used between burner mounting flange and furnace shell.

For maximum burner life, burner frame and furnace shell must be protected from hot gas flows.

Example: Burner Mounting Configurations



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Hot Installation Procedure for AZS Burner Blocks

The following procedure has been used to install AZS burner blocks "on the fly" in glass operations. Most of the experience has been in operations with hot face temperatures between 2000°F (1093°C) and 3050°F (1675°C).

1. All moisture within the burner block should be removed before starting installation. This is accomplished by placing the burner on the crown of the furnace or under the port area for a day.
2. Where the new block will contact older, hot materials, Fiberfrax paper should be used as a thermal buffer.
3. Remove the old block and clean the opening.
4. Insert the new block into the furnace.
5. Permit the new block to heat-up to near ambient temperatures (usually about one half to three quarters of an hour).
6. Resume normal operations.

Hot Zirconia Block Installation Procedure

Prior to installing the block, be certain that the block will rest on a smooth, flat surface for the full length of the block once it is in place. The weight of the block is not to be supported or rested on the frame flange, (this will prevent putting stress on the block by having the weight supported at two points—the front and back). During installation, the block should be supported for its entire length.

1. The block should be warmed to a temperature greater than 212°F and all moisture removed before starting installation.
2. Leave the firing end of the block exposed for one inch and have a strip of ceramic wool insulation covering the remaining length of the block.
3. Set the exposed end of the block into the hole for one hour. If the customer chooses to leave the housing connected to the block during installation, cooling air should be connected and blowing through the housing and block at all times. **Note: Any portion of the block that is exposed and outside the furnace wall after the block is in position should be wrapped with ceramic wool insulation and completely supported on a flat surface.**
4. After one hour of preheat per step 3, remove the ceramic wool insulation strip and insert the remaining portion of the block into the opening.

5. Once the block is installed, it should be shimmed and sealed. If the block is not properly sealed, hot furnace gases can damage or destroy the frame.
6. The burner's piping must be supported independently to minimize additional stresses applied to the block.
7. Allow the new block to heat up to near ambient temperatures (approximately 1 hour) and then resume normal operations.

Burner Adjustment and Control

Oxygen-fuel burners require accurate control of both fuel and oxygen for optimum performance. Piping to individual burners should include control valves for both oxygen and fuel. In addition, flow meters for oxygen and fuel capable of local or remote readout are required for proper burner adjustment.

Electrical service must match the voltage, phase and cycle of all electrical system components and be compatible with nameplate ratings. Ensure that all normal control safeguards are satisfied.

CAUTION: Oxygen should only be used with approved materials, properly cleaned pipe and equipment, and specially designed systems. Ordinary materials can be extremely flammable in the presence of oxygen and air enriched with oxygen.

Lubricants and sealing compounds should be used sparingly and should be a material that is suitable for oxygen service. Common petroleum lubricants are not satisfactory and are particularly hazardous because of their high heat of combustion and high rate of reaction.

O-rings should be lubricated with Dupont Krytox or equal. Pipe threads should be sealed with Fluoramics Lox 8 pipe joint paste or equal.

All organic and many inorganic materials will react with gaseous oxygen at particular temperature and pressure conditions. Fire and/or explosion may result from this reaction.



Maxon practices a policy of continuous product improvement. It reserves the right to alter specifications without prior notice.

CORPORATION
MUNCIE, INDIANA, USA

INDUSTRIAL COMBUSTION EQUIPMENT AND VALVES

Installation Instructions

Other Materials and Precautions

- Do **not** use Buna-N in any equipment that contacts oxygen.
- Packings, such as for valves, should be Viton or Teflon.
- **All accessory and pipe train components** such as regulators, solenoid valves, gauges, pressure switches, etc., **must be oxygen service compatible.**

Fuel supply piping must be large enough to maintain the required fuel pressures cataloged for the particular burner size used with burner operating at full rated capacity.

Anything more than minimal distance or piping turns may necessitate oversizing piping runs to keep pressure drops within acceptable ranges.

If multiple burners are fed from a single fuel train, care should be taken to minimize pressure drop and give maximum uniformity.

Clean atomizing lines are essential to prevent plugging of critical atomizing ports in the oil insert. (Refer to Design Guidelines, pages 4603-4604.)

Clean fuel lines are essential to prevent blockage of pipe train components or burner fuel ports. (Refer to Design Guidelines, pages 4603-4604.)

Fuel and oxygen piping should be located reasonably close to the burner and sized for the pressure and volume requirements of the burner.

Main shut-off cock should be upstream of the main fuel regulator and pilot (if supplied) line take-off. Use it to shut off fuel during shut-down periods of more than a few hours.

A fuel throttling control valve is not intended for tight shut-off.

Main fuel regulator is essential to maintain a uniform system supply pressure.

Size the regulator for full system capacity at the required pressure, carefully considering pipe train losses. Follow the instructions attached to the regulator during installation.

If used, pilot take-off should be upstream of the main gas regulator, but downstream of the main gas cock. It should normally include its own pilot gas regulator, a solenoid valve, and shut-off cock.

Pilot piping must be large enough to provide for the full flow and pressures shown in the catalog for your particular burner size.

Fuel shut-off valves (when properly connected to a control system) **are designed to shut the fuel supply off with a loss of electrical power. Manual reset valves** require operator attendance each time the system is started up (or restarted after a shut-down). **Motorized shut-off valves** permit automatic start-restart when used with an appropriate control system.

Any test connections must be plugged except when readings are being taken.

Control systems should provide all normally recommended interlocks (including operation of fuel shut-off valves). Sequencing control systems are available from Maxon that include provision for post-purge pilots during all but emergency shut-downs.

Control system's circuitry must not allow main fuel shut-off valve to be opened unless oxygen is on, and must de-energize valve upon loss of oxygen pressure, along with the other usual system interlocks.

Start-up Instructions

Start-up instructions are specific to each application. Contact your Maxon representative for instructions for your particular application.

Notes



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