

Installation and operating instructions

Application requirements

View Port

A view port to inspect burner flame is essential to inspect flame aspect. It is recommended to install the view port downstream of the flame, such that the entire burner front can be observed, as well as the pilot burner.

Required ancillary equipment

Ensure that all required ancillary equipment for safe operation and correct performance of the APX-burner is installed, as described in the applicable codes and/or process-related instructions.

Position of the burner in the process flow

MAXON APX-burners are designed for heating of a process flow in motion. Refer to table page 4-21.9-9 for minimum required process air velocity for in-duct and wall-mounted APX-burners.

In-duct APX burners should be mounted so as to direct their flames parallel to and in the same direction as the movement of the process flow.

Wall mounted burners can be mounted perpendicular to the process flow, as long as the minimum and maximum velocities as indicated in table page 4-21.9-9 are respected. Too high velocities may result in diverged flame patterns damaging combustion chamber or oven walls.

In both cases, the process flow upstream the burner should be uniform (maximum deviation of velocity of approx. 20 % in 90 % of the points of a plane immediately in front of the burners).

Combustion chamber

APX-burners may have in specific operating conditions (low oxygen or inert process air flows) quite luminous and radiant flames.

Special attention should be paid to the part of the duct covering the flame (combustion chamber). Especially in narrow ducts with flames close to the wall, it is essential to use correct materials and proper construction-designs. Contact MAXON for more information.

Installation instructions

Storage

APX-burners should be stored dry (inside). Prevent that water and/or dust can penetrate into the burner manifold during storage.

Handling

APX-burners are shipped as complete units. Handle the burner with care during unpacking, transport, lifting and installation. Use proper equipment. Any impact on the burner could result in damage.

Remove all plastic caps closing off gas and/air connections of the burner prior to connecting it with the pipe-train and combustion air fan.

Orientation

APX-burners can be mounted in any orientation (firing horizontally / vertically down -and upwards)

Mounting

Wall mounted APX burners are equipped with a continuous mounting flange or with mounting tabs. (see drawings on page 4-21.9-23, page 4-21.9-27 and page 4-21.9-28) Bolt the burner with this flange or mounting tabs onto the oven or duct. Tighten the bolts with correct torque and retighten all bolts after first firing and regularly after commissioning. Since wall-mounted APX-burners are foreseen to operate under suction or in balanced atmospheres, the use of gaskets is not absolutely required, however not prohibited.

Standard in-duct APX burners (ID-PB & ID-EB) are hung in the duct with the mounting tabs as shown on drawings page 4-21.9-25 and page 4-21.9-28.

In-duct plug & play burners are equipped with a mounting plate or plug (see drawing spage 4-21.9-26 and page 4-21.9-27). Bolt this mounting plug or plate onto the combustion chamber's mounting flange. Use proper gasket, available as an option. Tighten the bolts with correct torque and retighten all bolts after first firing and regularly after commissioning.

Use only the APX burner support supplied by MAXON for supporting the burner at the opposite side of the mounting plate/plug. This support is especially designed to give the burner sufficient flexibility during firing. Use of different kind of supports may damage or destroy the burner.

Refer to drawings page 4-21.9-23,page 4-21.9-25 and page 4-21.9-26 for correct position of the burner support.

Hot surfaces



Burner parts in contact with the flame will become hot. Always wait for the burner system to cool down before cleaning.

In specific installations and/or operation modes, some accessible parts of the burner outside the oven or duct may become hot. If required, precautions should be taken to prevent burning injuries by contact with hot surfaces.

Start-up instructions

Instructions provided by the company or individual responsible for the manufacture and/or overall installation of a complete system incorporating MAXON burners take precedence over the installation and operating instructions provided by MAXON. If any of the instructions provided by MAXON are in conflict with local codes or regulations, please contact MAXON before initial start-up of equipment.



Read the combustion system manual carefully before initiating the start-up and adjustment procedure. Verify that all of the equipment associated with and necessary to the safe operation of the burner system has been installed correctly, that all pre-commissioning checks have been carried out successfully and that all safety related aspects of the installation are properly addressed.

Initial adjustment and light-off should be undertaken only by a trained commissioning engineer.

Safety interlocks

Guarantee that all the required safety locks as described in the applicable local codes or regulations, or supplementary requested for safe operation of the overall installation, are working properly and resulting in a positive safety-lock of the burner. Do not bypass any of these safety interlocks, this will result in unsafe operation.

Checks during and after start-up

During and after start-up, check the integrity of the system. Check all bolted connections after first firing (first time on temperature) and retighten if necessary.

Purge

For safety-reasons, it is required to purge the installation sufficiently long to ensure that all possible combustibles are evacuated before ignition. Refer to the applicable local codes and your specific application requirements to determine the purge time.

Pilot ignition

Adjust pilot air flow and pilot gas regulator to correct set point before pilot ignition attempt. Turn adjustable orifice screw out (counter-clockwise) several turns from its fully seated position. Refine during lighting of the pilot to a yellow/blue flame and/or strongest stable flame signal. For FIG1 pilot endplates, note that pilot air may be adjusted for optimal pilot size and ignition by means of a shutter located between the cast iron pilot body and the stainless steel end enclosure plate.

Main burner ignition

Adjust the main gas regulator at the correct set-point before igniting the main burner. Ensure that the gas-air ratio control valve is in the start position when lighting the main burner.

Ratio adjustment

Once the main flame is ignited, adjust air/gas ratio of the burner to obtain the required combustion quality. Slowly increase capacity while observing the flame. Especially observe that the flame is well divided over the entire burner length, and going straight forward in the direction of the process air flow. Check that no damage is caused to duct walls or other equipment.

Maintenance and inspection

Safety requirements

Regular inspection, testing and recalibration of combustion equipment according to the installation's manual is an integral part of its safety. Inspection activities and frequencies shall be carried out as specified in the installation's manual.

Perform the following activities at least annually as part of a recommended preventative maintenance routine :

- Inspect burner internal parts for wear and oxidation.
- Inspect associated control instruments and devices for function with particular attention to all safety permissive switches.
- Perform leak tests on fuel shut-off valves according to any schedule established by the authority having jurisdiction.

Visual inspections

Regular visual inspection of all connections (air and gas piping to the burner, bolting of the burner mounting flange, burner support in the duct) and burner flame shape and aspect are essential for safe operation.

Recommended spare parts

Keep local stock of spark ignitor and flame detector. It is not recommended to keep local stock of other burner parts. Consult the installation manual for burner system spare parts and accessories.

Other available burner spare parts are:

- the mixing plate sets (mixing plate + screws and nuts + back-up bar),
- gas inlet gasket (gasket between gas inlet flange and burner body)
- end plate gasket (gasket between endplate and burner body)

