

# MEDIUM VELOCITY GAS BURNERS KINEMAX

## OPERATING INSTRUCTIONS

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### SAFETY

#### Please read and keep in a safe place



Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This unit must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at [www.docuthek.com](http://www.docuthek.com).

#### Explanation of symbols

**1, 2, 3, a, b, c** = Action

**→** = Instruction

#### Liability

We will not be held liable for damage resulting from non-observance of the instructions and non-compliant use.

#### Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

#### **⚠ DANGER**

Indicates potentially fatal situations.

#### **⚠ WARNING**

Indicates possible danger to life and limb.

#### **⚠ CAUTION**

Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

#### Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

#### Instructions provided by the company

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.

## APPLICATION REQUIREMENTS

### View port

→ A view port to observe burner flame is essential to inspect the flame aspect. Locate the view port downstream of the flame, looking back to the burner block. Make sure the complete flame can be evaluated.

### Supporting burner air and gas piping

→ The KINEMAX® burner shall not be used as support for the piping to the burner. Gas and air piping shall be supported in such way that no additional loads will be created on the burner.

### Burner mounting flange loads

→ Check burner weight and reinforce burner mounting flange or combustion chamber/furnace back wall if necessary to take the complete burner weight.

## INSTALLATION

### Handling of KINEMAX burners

→ KINEMAX burners are shipped as complete units. Handle burners with care, using proper equipment during unpacking, transport, lifting and installation.

### ⚠ WARNING

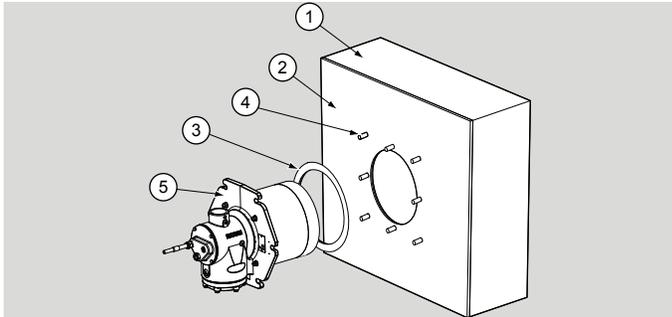
Any impact on the burner could result in damage.

→ To prevent damage in transit, accessories such as flame rods, control valves and/or UV-scanners, may be packed separately and shipped loose.

### Flange the burner to the installation

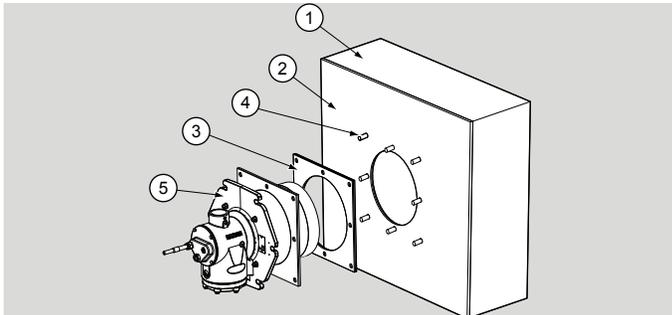
- 1 Use proper MAXON optional gaskets.
- 2 Bolt the burner to the installation's burner mounting flange. Tighten the flange bolting with correct torque.
- 3 Retighten all bolts after first firing and regularly after commissioning.

### KINEMAX with standard block



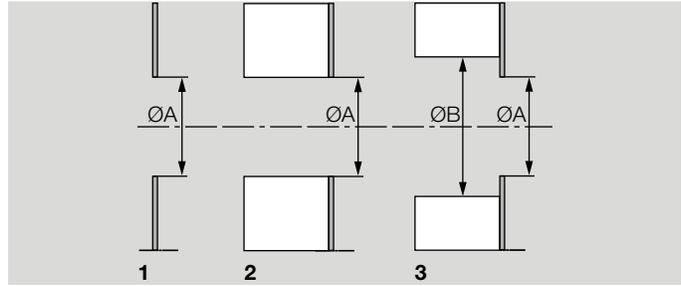
- 1 Insulation
- 2 Housing
- 3 Gasket (optional)
- 4 Mounting studs
- 5 Burner

### KINEMAX with optional mounting flange



- 1 Insulation
- 2 Housing
- 3 Gasket (optional)
- 4 Mounting studs
- 5 Burner

### Furnace / combustion chamber requirements



**Sketch 1 :** sheet metal combustion chamber/furnace without internal insulation. Flange/opening internal diameter shall be ØA

**Sketch 2 :** sheet metal combustion chamber/furnace with soft wall internal insulation. Flange/opening internal diameter shall be ØA

**Sketch 3 :** furnace or ovens with brick walls: opening in brick wall shall be ØB (to be rammed with castable refractory)

### KINEMAX with refractory block

Dimensions in in. (mm)					
Burner size	1.5	2	3	4	6
ØA	9 (229)	9 (229)	10.5 (267)	11.3 (289)	16.4 (417)
ØB	14.5 (369)	14.5 (369)	16 (407)	16.8 (429)	21.9 (557)

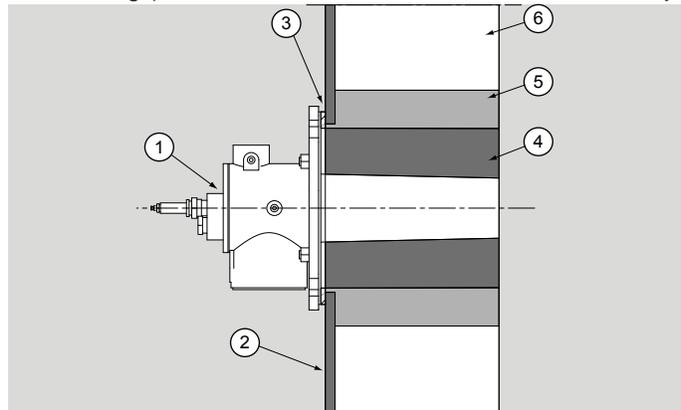
### KINEMAX with optional stainless steel discharge sleeve

Dimensions in in. (mm)					
Burner size	1.5	2	3	4	6
ØA	4.4 (112)	4.6 (118)	5.7 (147)	7.2 (184)	N/A
ØB	9.9 (252)	10.1 (258)	11.2 (287)	12.7 (324)	N/A

### Refractory wall : Standard blocks

→ KINEMAX burners with standard blocks (without supporting sleeve) require supporting of the burner block by the furnace wall.

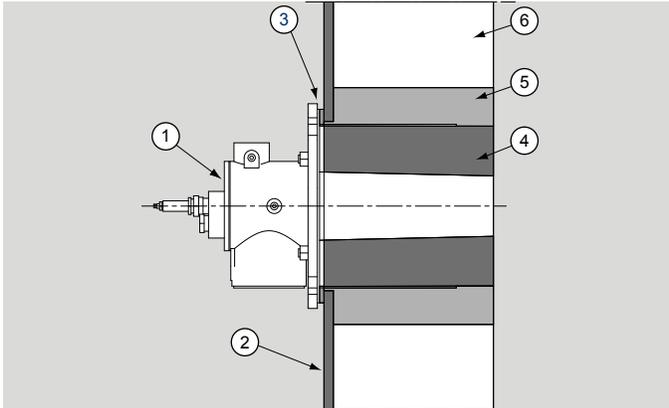
→ Ram the gap between block and furnace with castable refractory.



- 1 KINEMAX burner with standard block
- 2 Furnace shell
- 3 MAXON gasket (optional)
- 4 Burner refractory block
- 5 Castable refractory, rammed into the space around the burner block
- 6 Furnace refractory wall

### Furnace wall with soft insulation : Blocks with supporting sleeve

- KINEMAX burners which are mounted in a furnace wall with soft insulation, need to have a burner block sleeve (optional) specified. This sleeve makes the burner block self supporting.
- Remaining space between burner block and insulated wall should be packed tightly with ceramic fibre insulation.



- 1 KINEMAX burner with block and optional block sleeve
- 2 Furnace shell
- 3 MAXON gasket (optional)
- 4 Burner refractory block with optional sleeve
- 5 Fibre insulation, fitted into the space around the burner block
- 6 Furnace fibre insulation

### Installation of a replacement block sub-assembly

- 1 Secure heat processing equipment from operation following manufacturer's instructions.
- 2 Disconnect piping, etc. and remove KINEMAX Burner from installation.
- 3 Loosen and remove the nuts holding the burner body to the burner block.
- 4 Remove old block assembly and remount new block assembly. Be sure gasket between block and body is in place between the components.

## COMMISSIONING

### ⚠ CAUTION

- 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.
- Verify that all pre-commissioning checks have been carried out successfully and that all safety related aspects of the installation are properly addressed.

### First firing or restart after shut-down

- During first start-up of the burner, allow extended period at low firing range to minimize potential damage from accumulated and retained moisture in refractory burner block.
- During cold starts, the temperature rise shall be limited – allow the burner to fire on low fire for some time to allow the parts to heat up slowly for maximum life.

### Safety interlocks

- Guarantee that all the required safety locks as described in the applicable local codes or regulations, or supplementary safety locks 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.

### Typical ignition sequences

- 1 Pre purge of burner and installation, according to the applicable codes and the installation's requirements.
- 2 Combustion air control valve shall be in the minimum position to allow minimum combustion air flow to the burner.
- 3 Pre-ignition (typically 2s sparking in air).
- 4 Open pilot gas and continue to spark the ignitor (typically 5s).
- 5 Stop sparking, continue to power the pilot gas valves and start flame check.
- 6 Trip burner if no flame can be detected from here on.
- 7 Check pilot flame stability (typical 5s to prove the stable pilot).
- 8 Open main gas and allow enough time to have main gas in the burner. (typical 5s + time required to have main gas in the burner).
- 9 Close the pilot gas valves.
- 10 Release to modulation (allow modulation of the burner).

- Above sequences shall be completed to include all required safety checks during the start-up of the burner (process and burner safeties).

### Pilot ignition

- 1 Adjust pilot air flow and pilot gas regulator to correct set point before pilot ignition attempt.
- 2 Turn adjustable orifice screw out (counter-clockwise) several turns from its fully seated position.
- 3 Refine during lighting of the pilot to a yellow/blue flame and/or strongest stable flame signal.

### Main burner ignition

- 1 Adjust the main gas regulator at the correct set point before igniting the main burner. Ensure that the gas/air ratio valve is in the start position when lighting the main burner.
- 2 After ignition of main burner, allow some time on minimum capacity to allow the burner parts to heat up slowly.

### Ratio adjustment

- 1 Once the main flame is ignited, adjust air/gas ratio of the burner to have the required combustion quality.
- 2 Slowly increase capacity while observing the flame. Do not increase capacity too fast to avoid damage to burner parts or furnace due to excessive temperature gradient.

## MAINTENANCE

### Safety requirements

- Regular inspection, testing and recalibration of combustion equipment according to the installation's manual are 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:
  - 1 Inspect burner internal parts for wear and oxidation, paying special attention to the refractory of the burner block (when applicable).
  - 2 Inspect associated control instruments and devices for function with particular attention to all safety permissive switches.
  - 3 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) and burner flame shape and aspect are essential for safe operation.

## TECHNICAL DATA

### Materials of construction

Housing: Gray iron  
Gas nozzle: Gray iron 1.5"-4"/ductile iron 6"  
Air orifice plate: 1.5"-4" Carbon Steel/6" Gray Iron  
Block sleeve: Carbon steel / AISI 304 (1.4301)  
block: Castable refractory  
sleeve (without block): AISI 310 (1.4541)

## RECOMMENDED SPARE PARTS

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

## STORAGE OF KINEMAX BURNERS

- KINEMAX burners shall be stored dry (inside). Burner blocks have been cured carefully before shipment and shall be kept dry. Wetting of the blocks could result in premature failures.

## CERTIFICATION

### Eurasian Customs Union



The products KINEMAX meet the technical specifications of the Eurasian Customs Union.

## FOR MORE INFORMATION

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschröder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.  
Honeywell MAXON branded products  
201 E 18th Street  
Muncie, IN 47302  
USA  
www.maxoncorp.com  
ThermalSolutions.honeywell.com



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