

## Installation and Operating Instructions for M-PAKT® Burners

### Application Requirements

#### View port

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

#### Support burner air and gas piping

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

#### Burner mounting flange loads

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

#### Ratio control

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M-PAKT® burners may be operated with 40 to 70% excess air. Consult page 1-1.7-7 for required sleeve materials per application.

MAXON recommends the use of characterized fuel/air ratio control through SMARTLINK MRV® or MICRO-RATIO® valves. Consult MAXON for specific recommendations based upon the burner application and performance requirements.

#### Flame supervision

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M-PAKT® Burners require the use of UV or IR flame scanners. Some models of flame sensor may not respond well to ultra low NOx flame signatures. Consult sensor manufacturers for specific recommendations.

#### Fuels

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M-PAKT® Burners are designed to operate on natural gas, propane and butane. Specific emissions performance can be affected by fuel. Contact MAXON for recommendations on alternative fuels.

## Installation Instructions

#### Storage of M-PAKT® Burners

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M-PAKT® Burners shall be stored dry (inside).

#### Handling of M-PAKT® Burners

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

#### Flange the burner to the installation

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Bolt the burner to the installation's burner mounting flange. Use proper gasketing. Tighten the flange bolting with correct torque. Retighten all bolts after first firing and regularly after commissioning.

## Start-up Instructions for M-PAKT® Burner

Read complete instructions before proceeding, and familiarize yourself with all the system's equipment components. Verify that your equipment has been installed in accordance with the original manufacturer's current instructions and complies with all applicable codes and standards.



**CAUTION: Initial adjustment and light-off should be undertaken only by trained and experienced personnel familiar with combustion systems, with control/safety circuitry, and with knowledge of the overall installation. Instructions provided by the company and/or individuals responsible for the manufacture and/or overall installation of complete system incorporating MAXON burner take precedence over these provided by MAXON. If MAXON instructions conflict with any codes or regulations, contact MAXON before attempting start-up. Use only an interrupted pilot with the M-PAKT® burner. Do not use M-PAKT® Burners with main gas shut off valves having extended opening times (> 6 seconds). Delayed introduction of main fuel can create strong light offs and thermal damage to burner internals.**

### Typical ignition sequence

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

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

Locate one pilot gas valve as close as possible to the pilot burner gas inlet, to have fast ignition of the pilot burner.

**Setting appropriate fuel pressure at any point**

Step 1:

To properly adjust the fuel/air ratio of the M-PAKT® Burner at any firing rate, first measure the differential air pressure between the burner air test connection and the firing chamber.

Step 2:

Then multiply the air pressure value by the appropriate pressure factor, m, shown in the tables below.

Step 3:

Next, measure the fuel pressure differential between the burner fuel test connection and the firing chamber and adjust the fuel pressure with characterized fuel control valve at that point to the value calculated in Step #2.

Example:

On a 2.5M M-PAKT® Burner near half-fire, the differential air pressure reading is 2.2" wc . To figure the appropriate fuel pressure, multiply 2.2" wc by the m factor 0.99. The result is 2.18" wc . Set the differential fuel pressure to 2.18" wc .

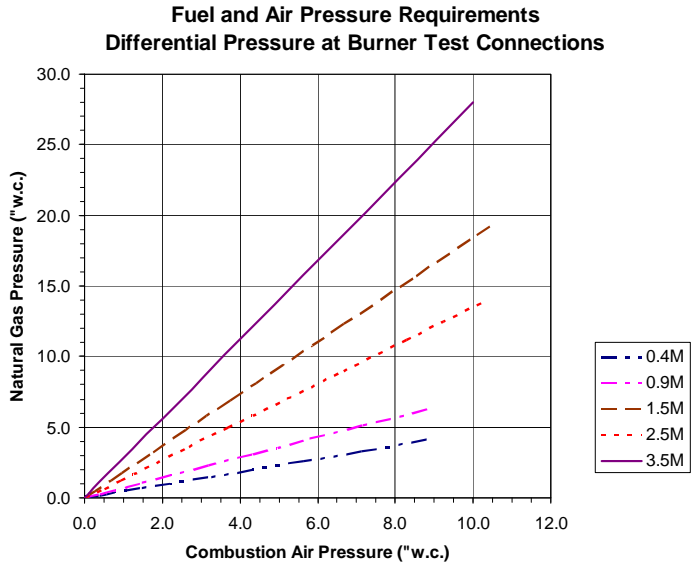
Packaged Burners						
Size		0.4M	0.9M	1.5M	2.5M	3.5M
Max Capacity	MBtu/h	0.41	0.9	1.6	2.5	3.5
Max Fuel Pressure	" wc	4.1	10.4	8.6	10.3	14.4
Min Fuel Pressure	" wc	1.4	1.6	2.0	2.0	1.9
Max Air Pressure	" wc	8.8	8.8	10.1	10.4	10.3
Min Air Pressure	" wc	0.3	0.3	0.3	0.3	0.3
m	---	0.47	1.18	0.85	0.99	1.4

EB Burners							
Size		EB2	EB3	EB4	EB5	EB6	EB7
Max Capacity	MBtu/h	0.8	1.7	2.7	4.5	5.8	8.4
Max Fuel Pressure	" wc	12.1	37.2	24	32.6	37	60
Min Fuel Pressure	" wc	0.6	0.4	0.7	0.6	0.7	0.7
Max Air Pressure	" wc	29.4	29.7	28	32.9	27.5	27.2
Min Air Pressure	" wc	0.3	0.3	0.3	0.3	0.3	0.3
m	---	0.41	1.25	0.86	0.99	1.35	2.21

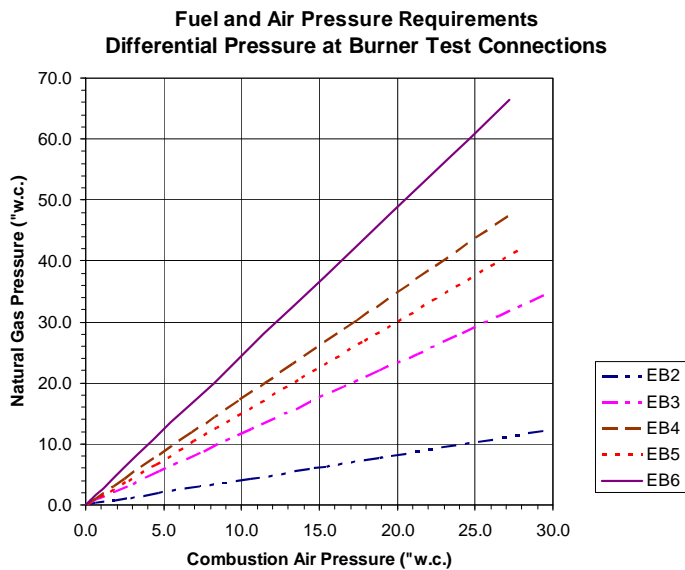


Start-up Instructions

Fuel/Air Relationships - Packaged M-PAKT® Burner



Fuel/Air Relationships - EB M-PAKT® Burner



## Maintenance and Inspection Instructions

### Safety requirements

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

### Visual inspections

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Regular visual inspection of all connections (air and gas piping to the burner, bolting of the burner to the furnace) and burner flame size and aspect are essential.

### Spare parts

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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.