PATTISON-KELLEY

MACH GAS-FIRED BOILER

Mach C1500 & C2000
OUTDOOR BOILER KIT GUIDE

This manual is to be used in conjunction with the LMACH Installation & Owner's Manual (latest edition).

C.S.A Design-Certified
Complies with ANSI Z21.13/CSA 4.9
Gas-Fired Low Pressure Steam and Hot Water Boilers

ASME Code, Section IV
Certified by Patterson-Kelley

Installation Date: _______________________

100 Burson Street, P.O. Box 458,
East Stroudsburg, PA 18301
Telephone: (877) 728-5351,
Facsimile: (570) 476-7247
www.pkboilers.com
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The following words are used in this manual to denote the degree of seriousness of the individual hazards.

**DANGER** - Used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme conditions.

**WARNING** - Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION** - Used to indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE/NOTE** - NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol is not used with this signal word.

**WARNING**

Extensive safety information is contained in the LMACH Installation & Owner’s Manual (latest edition) as well as warnings, installation requirements and diagrams.
1.0 INTRODUCTION

1.1 COMPLETED MACH C1500/C2000 OUTDOOR BOILER

The completed boiler is shown above. Prior to shipping, the boiler has been modified by the factory in order to function properly outdoors. Special field installation procedures are required to complete the outdoor installation of the boiler. These additional procedures are described in this manual. This manual is a supplement to the LMACH Installation & Owner’s Manual (latest edition).

This and all boilers require proper installation, electrical connections, combustion air and flue vent installation, gas piping, water piping, as well as proper startup and service.

This boiler can be used indoors with proper venting to outdoors and standard default parameters. Call PK service technicians for assistance. Be sure to identify your boiler and its specific installation requirements.
2.0 Installation

Additional parts are supplied with the boiler requiring installation in the field. Additional outdoor specific customer supplied parts required as well.

2.1 REQUIRED TOOLS AND PARTS

2.1.1 Tools

The following tools are required for the completion of the MACH outdoor boiler kit.
- Large screwdriver (slotted)
- Drill power driver
- 3/8” hex driver bit
- 5/16” hex driver bit
- Pliers

2.1.2 Parts

(Supplied by PK)
- Air Inlet Box Cover
- Front Hood
- 6) ¼”-20 x 1” self drilling screws
- 4) #10 self drilling screws
- Exhaust adapter for C1500 (only)

(Customer required)
- Exhaust venting
- Approved exhaust vent sealant
- Seal tight electrical connector
- Waterproof conduit
- Tube of clear RTV silicone
2.2 AIR INLET BOX COVER INSTALLATION

Center the box cover over the air inlet and secure the cover with the (3) ¼"-20 X 1" self drilling screws on the right and left side.

View of inlet box installation. Install (3) ¼"-20 X 1" screws per side on both sides.

2.3 FRONT HOOD INSTALLATION

1. Silicone caulk along the complete underside length of the 1" wide lip on the front hood.
2. Install the hood along the front edge of the top of the cabinet using (4) #10 self-tapping screws. Drill the screws through the hood into the cabinet at evenly spaced intervals along the hood.

Image 6: Front Hood attached.
2.4 Exhaust Vent System Installation

**WARNING**

The boiler vent should be installed per this manual's instructions. The information contained herein should be used as a guide only and is not intended to be used in lieu of qualified technical expertise. Failure to comply may result in injury or death.

See MACH-##VG Air and Venting Supplement Manual (latest edition) for additional venting requirements.

Do not use CPVC venting.

The Mach C1500 Outdoor Boiler requires an 8" diameter exhaust. PK supplies a 10” to 8” reducer with the boiler.

<table>
<thead>
<tr>
<th>MACH Boiler Size</th>
<th>Nominal Stack Size</th>
<th>Supplier / Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1500</td>
<td>8&quot;</td>
<td>Heat-Fab / 91002PK08 or equivalent</td>
</tr>
</tbody>
</table>

The Mach C2000 Outdoor Boiler requires an 10” diameter exhaust, no reducer is required.

The exhaust vent must extend at least three (3) feet above the air intake or at least two (2) feet above the highest part of any independent structure within ten (10) feet of the vent.

Boiler clearance for combustibles / non-combustibles should be maintained per LMACH Installation & Owner’s Manual (latest edition).

The Vent should have seals or gaskets present to contain the positive pressure exhaust. These seals must be installed properly. When the vent manufacturer requires the use of a silicone sealant, only an approved high temperature RTV silicone shall be used.
2.5 **ELECTRICAL CONNECTIONS**

Use water proof conduit and seal tight connectors to the boiler. Electrical access plugs are located on both sides of the boiler for convenience. Before starting the boiler, check to ensure that the proper electrical service is connected to the boiler.

See LMACH Installation & Owner’s Manual (latest edition) for specific electrical requirements and diagrams. Incorrect electrical connections may result in severe injury or death.
3.0 Maintenance

The MACH outdoor boiler requires all of the maintenance as described in LMACH Installation & Owner’s Manual (latest edition) as well as the additional maintenance listed below.

These additional maintenance items should be performed monthly.

1) Check for flue gas recirculation into the air inlet. Flue gas recirculation indicates that the vent is not installed properly for local conditions.
2) Check for freezing of the condensate lines. Frozen lines will result in boiler malfunction. Operation of the boiler in cold temperatures may require the use of heat trace lines for the boiler condensate trap and drain.
3) Check for inlet air box, stack and safety relief valve obstructions due to outdoor debris such as but not limited to leaves, insects, snow, branches and other blockages.
4.0 Assembly Drawings

4.1 Assembly Drawing C1500