

# TECHNICAL INSTRUCTIONS

## Procedure:

### Modulex Annual (12-Month) Maintenance

#### Applies to Modulex Boiler Models:

- MLX-303
- MLX-454
- MLX-606
- MLX-757
- MLX-909
- MLX-1060

#### Description of Document:

Annual maintenance consists of a number of recommended and required tasks. This document provides instructions for the yearly requirement of inspection, and if necessary, replacement of the igniter and flame detector for each burner section.

#### NOTE

For Modulex 24-Month maintenance instructions (Fireside Inspection), see **Document TID-0027**.



Modulex Annual (12-Month) Maintenance Kit



Modulex MLX Series Boiler

#### Modulex Models and Associated Annual Maintenance Kit P/Ns

| Modulex Model:                  | Maintenance Kit P/N: |
|---------------------------------|----------------------|
| MLX-303 Annual Maintenance Kit  | 58019-01             |
| MLX-454 Annual Maintenance Kit  | 58019-02             |
| MLX-606 Annual Maintenance Kit  | 58019-03             |
| MLX-757 Annual Maintenance Kit  | 58019-04             |
| MLX-909 Annual Maintenance Kit  | 58019-05             |
| MLX-1060 Annual Maintenance Kit | 58019-06             |

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# Modulex Annual (12 Month) Maintenance

Technical instruction Document

TID-0026\_0A

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## 1. Annual (12-Month) Maintenance Instructions

Following are the procedures necessary to perform the annual (12 month) maintenance on all Modulex MLX boiler models and sizes. Each Annual Maintenance Kit contains a flame detector, spark igniter, and associated gaskets.

A correctly adjusted Modulex boiler needs very little care other than yearly maintenance. The frequency of cleaning needed depends on the cleanliness of the air used for combustion. Note that dust present in the air at the combustion intake will result in reduced burn efficiency and, consequently, reduced heat output.

Annual maintenance consists of a number of recommended and required tasks as listed below. This section provides instructions for the yearly requirement of inspection, and if necessary, replacement of the igniter and flame detector for each burner section. Some of the more involved inspection and cleaning (such as cleaning the burner modules or condensate tray) are described in both the main Modulex boiler manual (**GF-115-H**) and the Instructions for the MLX 24-month Fireside Maintenance instructions (P/N **TID-0027**). For each of the different Modulex boiler models, there is an associated maintenance kit P/N, as shown in the table on the cover and at the end of these instructions.

### REQUIRED Tasks:

- Inspect air filters (replace if needed, AERCO **P/N 95261879**)
- Inspect condensate drain lines (clean if needed)
- Check for gas leaks using a soapy solution
- Inspect igniter and flame sensor (replace, Igniter: **P/N 95251245**, Detector: **P/N 95251246**)
- Check pH of boiler system water (refer to **Appendix C**, Boiler Water Chemistry and Maintenance) in MLX boiler manual **GF-115-H**.
- Check flame detection circuitry (See **paragraph 1.3**)

### RECOMMENDED Tasks:

- Inspect vent pipe (clean if needed)
- Inspect flue collector (clean if needed)
- condensate tray (clean if needed)
- Wash heat exchanger (clean if needed) (see MLX boiler manual **GF-115-H, paragraph 8.3.3**)
- Check and adjust air/fuel ratio (see MLX boiler manual **GF-115-H, paragraph 7.5.5**)
- Inspect and clean burner surface (see MLX boiler manual **GF-115-H, section 8.3**)
- Inspect heat transfer surfaces (clean if needed)
- Clean strainer mesh (Monthly)
- Check inlet gas pressure. Changes in gas pressure require combustion recalibration (see MLX boiler manual **GF-115-H, paragraph 7.5.5**)
- Check vent and inlet air terminations
- Check electrical supply voltages

### Tools Required

Common hand tools, plus a spark gap feeler gauge are required to perform the annual maintenance tasks described in this bulletin.



Prior to performing the following disassembly and inspection procedures, ensure that all electrical power to the boiler has been turned off and the external gas shut-off valve is fully closed.

## 1.1 - Disassembly for Annual Maintenance

Disassemble the unit per **Instruction 1.1**, below, and locate the electrical components to be replaced.

### INSTRUCTION 1.1

#### Unit Disassembly for Annual Maintenance

1. Disconnect electrical power to the unit by turning off the external circuit breaker.
2. Turn off the external gas supply shutoff valve.

#### NOTE

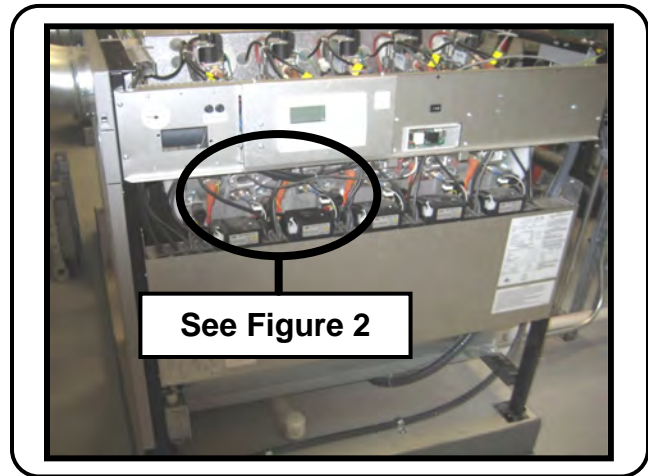
The cover is secured with spring clips and pins to front, back and side panels of the unit. In addition, two (2) groups of ground wires from the frame of the boiler are attached with clips to the underside of the top cover. Use care when disconnecting these ground wire clips. Note that all lugs have capture spring clips that are released by pressing a small nub under lug itself.

3. Remove the top cover from the boiler. A screwdriver may be needed to pry the cover from the two pins on either end.
4. Carefully detach the ground wire clips from the underside of the cover (see note above).
5. Remove the front panel from the boiler to provide access to the spark igniter and flame detector for each heat module of the boiler (see **Figure 1**).
6. Refer to **Figure 2** and **Figure 3** and locate the installed locations of the igniters and flame detectors. These Figures show a Modulex MLX-757 containing five (5) igniters and five (5) flame detectors.

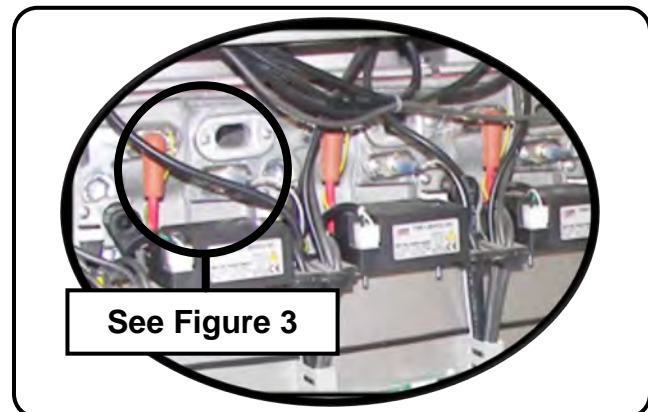
END

#### NOTE

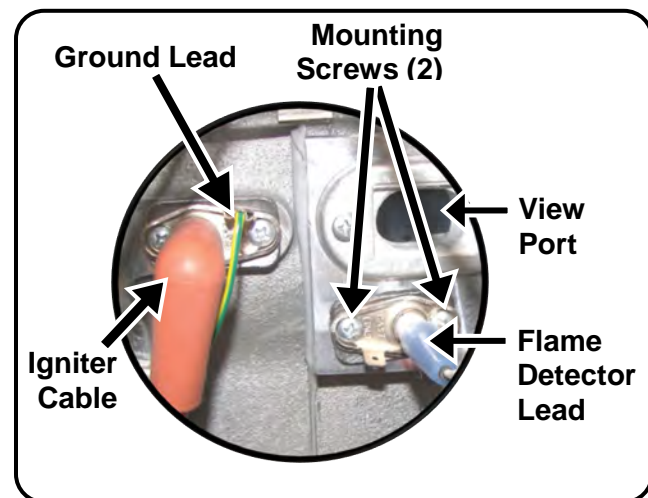
The number of burner sections, and thus the electrical components, varies by model.



**Figure 1: Cover Removed (Rear)**



**Figure 2: Electrical Connections**



**Figure 3: Electrical Components**

## 1.2 Replacing the Spark Igniters and Flame Detectors

The Spark Igniter and Flame Detector are replaced per **Instructions 1.2 A** and **1.2B** below.

### INSTRUCTION 1.2 A

#### Replacing the Spark Igniter

The spark igniter for each heat module is installed to the left of the view port as shown in **Figure 3**. Remove and replace as follows:

1. Disconnect the spark igniter ground wire and unplug the igniter cable.
2. Using a Phillips head screwdriver, remove the two (2) screws securing the igniter and remove it from the boiler.
3. Obtain a replacement igniter from the maintenance kit. Using a spark gap feeler gauge, ensure that the igniter spark gap is 4mm to 5 mm.
4. Install the replacement igniter and secure it in place with the two (2) screws removed in step (b).
5. Reconnect the igniter cable and ground wire
6. Repeat steps (1) through (5) for each igniter in the Modulex boiler.

END

### INSTRUCTION 1.2 B

#### Replacing the Flame Detector

The flame detector for each heat module is installed beneath the view port as shown in **Figure 3**. Remove and replace as follows:

1. Disconnect the flame detector wire lead.
2. Using a Phillips head screwdriver, remove the two (2) screws securing the flame detector and remove it from the boiler.
3. Obtain a replacement flame detector from the maintenance kit.
4. Install the replacement flame detector and secure it in place with the two (2) screws removed in step (b).
5. Reconnect the flame detector wire lead.
6. Repeat steps (1) through (5) for each flame detector in the boiler.

END

## 1.3 Testing the Flame Detection Circuitry

The Modulex boiler is designed to automatically shut down in the absence of a flame to prevent the buildup of unburned fuel in the combustion chamber. Test the circuit by removing a flame detector lead from any of the burner sections (**Figure 3**) while the unit is running. If the unit shuts down after a few seconds, the flame detection circuitry is functional. If boiler does not automatically shut down, there is a problem with the circuit. In this case, manually shut down the boiler and contact appropriate technical help to resolve the problem.

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|---------------------------------|----------------------|
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