



# BENCHMARK BOILER START-UP FORM

Please complete **one (1) form for each UNIT** at the site and return to AERCO for warranty validation within 30 days of start-up. After completion, e-mail this form to: **STARTUP@AERCO.COM**.

Completed By: \_\_\_\_\_ Date: \_\_\_\_\_

## Location

Installation Name: \_\_\_\_\_ SST Technician: \_\_\_\_\_  
 Street Address: \_\_\_\_\_ Company: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_ Phone #: \_\_\_\_\_  
 AERCO Sales Rep: \_\_\_\_\_ Unit Serial #: \_\_\_\_\_

## Equipment Classification

Unit Type:     BMK1.5     BMK2.0     BMK3.0     BMK750     BMK1000  
 Number at Site    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
 Unit Type:     BMK1500     BMK2000     BMK2500     BMK3000     BMK6000  
 Number at Site    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_

## Benchmark Models

Please go to the section corresponding to the boiler you are starting up, complete that section and the Gateway section (and, optionally, any Notes you wish to include), and then e-mail this form to: **STARTUP@AERCO.COM**.

- |  |  |
|--|--|
| <a href="#">Benchmark 1.5</a>            | <a href="#">Benchmark 2000</a>           |
| <a href="#">Benchmark 2.0</a>            | <a href="#">Benchmark 2000 Dual Fuel</a> |
| <a href="#">Benchmark 2.0 Dual Fuel</a>  | <a href="#">Benchmark 2500</a>           |
| <a href="#">Benchmark 3.0</a>            | <a href="#">Benchmark 2500 Dual Fuel</a> |
| <a href="#">Benchmark 3.0 Dual Fuel</a>  | <a href="#">Benchmark 3000</a>           |
| <a href="#">Benchmark 750</a>            | <a href="#">Benchmark 3000 Dual Fuel</a> |
| <a href="#">Benchmark 1000</a>           | <a href="#">Benchmark 6000</a>           |
| <a href="#">Benchmark 1500</a>           | <a href="#">Benchmark 6000 Dual Fuel</a> |
| <a href="#">Benchmark 1500 Dual Fuel</a> | <a href="#">Gateway</a>                  |
|  | <a href="#">Notes</a>                    |

## NATURAL GAS Combustion Calibration for Benchmark 1.5 Low NOx Boiler or Benchmark 1.5 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4, of GF-120 (or GF-121 for Dual-Fuel Boilers) for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

Iris Air Damper position \_\_\_\_\_

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @16%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 16% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 1.5 Low NOx Dual Fuel Boiler

**Note:** Consult Chapter 4 of GF-121 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 70% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @16%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 16% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 2.0 Low NOx Boiler

**Note:** Consult Chapter 4 of GF-123 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

Iris Air Damper position \_\_\_\_\_

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 2.0 Low NOx Boiler

**Note:** Consult Chapter 4 of GF-123 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @20%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 20% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 2.0 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-127 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_°F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

Iris Air Damper position \_\_\_\_\_

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @20%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 20% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 2.0 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-127 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_°F.

Gas Pressure downstream of the SSOV at 91% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @91%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @21%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 21% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 3.0 Low NOx Boiler

*Note: Consult Chapter 4 of GF-116 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

Iris Air Damper position \_\_\_\_\_

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @50%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @40%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @14%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 3.0 Low NOx Dual-Fuel Boiler

*Note: Consult Chapter 4 of GF-117 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

Iris Air Damper position \_\_\_\_\_

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 3.0 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-117 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_°F.

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @75%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 750 Low NOx Boiler

**Notes:**

- For Low NOx Combustion Calibration (<20 ppm NOx), consult Chapter 4 of GF-130 for proper oxygen (O<sub>2</sub>) settings.
- For Ultra Low NOx Combustion Calibration (<9 ppm NOx), consult Appendix L of GF-130 for proper oxygen ((O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_°F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 1000 Low NOx Boiler

**Notes:**

- For Low NOx Combustion Calibration (<20 ppm NOx), consult Chapter 4 of GF-130 for proper oxygen (O<sub>2</sub>) settings.
- For Ultra Low NOx Combustion Calibration (<9 ppm NOx), consult Appendix L of GF-130 for proper oxygen ((O<sub>2</sub>) settings.

**Ambient combustion air temperature during calibration \_\_\_\_\_ °F**

**Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.**

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

**Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_**

## NATURAL GAS Combustion Calibration for Benchmark 1500 Low NOx Boiler

*Note: Consult Chapter 4 of GF-142 for proper oxygen (O<sub>2</sub>) settings.*

**Ambient combustion air temperature during calibration \_\_\_\_\_ °F**

**Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.**

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @16%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

**Vacuum at Blower Proof Switch at 16% valve position: \_\_\_\_\_**

## NATURAL GAS Combustion Calibration for Benchmark 1500 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-144 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @14%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 14% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 1500 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-144 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @14%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 14% valve position: \_\_\_\_\_



## NATURAL GAS Combustion Calibration for Benchmark 2000 Low NOx Boiler

*Note: Consult Chapter 4 of GF-142 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @80%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @60%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @16%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 16% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 2000 Low NOx Dual-Fuel Boiler

*Note: Consult Chapter 4 of GF-144 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @14%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 20% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 2000 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-144 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @14%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 20% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 2500 Low NOx Boiler

**Note:** Consult Chapter 4 of GF-137 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @50%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @40%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @16%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 16% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 2500 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-134 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @20%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @16%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 16% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 2500 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-134 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @20%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @16%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 16% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 3000 Low NOx Boiler

*Note: Consult Chapter 4 of GF-137 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_°F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @50%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @40%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @14%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 14% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 3000 Low NOx Dual-Fuel Boiler

*Note: Consult Chapter 4 of GF-134 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_°F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @14%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 14% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 3000 Low NOx Dual-Fuel Boiler

**Note:** Consult Chapter 4 of GF-134 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_°F.

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 6000 Low NOx Boiler

**Note:** Consult Chapter 4 of GF-133 for proper oxygen (O<sub>2</sub>) settings.

Ambient combustion air temperature during calibration \_\_\_\_\_°F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @50%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @40%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## NATURAL GAS Combustion Calibration for Benchmark 6000 Low NOx Dual-Fuel Boiler

*Note: Consult Chapter 4 of GF-141 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @70%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @50%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @40%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## PROPANE Combustion Calibration for Benchmark 6000 Low NOx Dual-Fuel Boiler

*Note: Consult Chapter 4 of GF-141 for proper oxygen (O<sub>2</sub>) settings.*

Ambient combustion air temperature during calibration \_\_\_\_\_ °F

Gas Pressure downstream of the SSOV at 100% valve position \_\_\_\_\_ inches W.C.

| Valve Position | O <sub>2</sub> | CO        | NOx       | Drive Voltage To Blower | Supply Gas Pressure | Manifold Gas Pressure |
|----------------|----------------|-----------|-----------|-------------------------|---------------------|-----------------------|
| @100%          | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @85%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @65%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @45%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @30%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |
| @18%           | _____ %        | _____ ppm | _____ ppm | _____ Vdc               | _____ in. W.C.      | _____ in. W.C.        |

Vacuum at Blower Proof Switch at 18% valve position: \_\_\_\_\_

## Gateway Configuration

Name: \_\_\_\_\_

Gateway Model: ProtoNode (Serial)

Phone Number: \_\_\_\_\_

ProtoNode (Lon)

E-Mail Address: \_\_\_\_\_

Job Name: \_\_\_\_\_

Input wiring termination to the Gateway translation device (Check one)

- EIA-485 (2 wire)
- EIA-485 (4 wire)
- EIA-232

Building Automation System (BAS) protocol (Check one)

- BacNet:
  - IP:
  - MS/TP:
- Johnson Controls - N2:
- LonWorks:
- Modbus - IP:

What Baud Rate. (Check One):

- 156,000
- 76,800
- 38,400
- 19,200
- 9,600
- Other \_\_\_\_\_

BAS Device Address #'s \_\_\_\_\_

N2 Device Node ID \_\_\_\_\_

**OR:**

BACnet Device Instance #'s \_\_\_\_\_

BACnet Network Number \_\_\_\_\_

BACnet IP Address \_\_\_\_\_

**OR:**

LonWorks Program ID \_\_\_\_\_

**ADDITIONAL NOTES:**