CROWN BOILER

DESIGNED TO LEAD

# AWR, AWI, BWF BSI, CWI, CWD Series Boilers

## Instructions for Field Conversion From:

- Natural Gas to LP
- LP to Natural Gas

**WARNING**

**This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. If the information in these instructions is not followed exactly, a fire, an explosion or production of carbon monoxide may result causing property damage, personal injury, or loss of life. The qualified service agency is responsible for proper installation of this kit. The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with the kit.**

In addition to these instructions, this kit consists of the following items which are factory configured for the fuel to which the boiler is being converted:

1) Gas Valve
2) Pilot Assembly
3) Main Burner Orifice
4) Fuel Conversion Label
5) A copy of the installation manual for the boiler being converted

In addition, some conversion kits also include a main burner with a pilot bracket. This burner is provided when the new pilot assembly is mounted at a different angle than the original pilot. Refer to the "Parts" section of the enclosed boiler installation manual for an illustrated list of all burner and gas train components.

A complete list of the specific parts in each kit is shown in Table 1.

## WARNING

**Some intermittent ignition-equipped natural gas boilers manufactured before 2005 were supplied with a Honeywell S8600F ignition module. This module is not suitable for use with LP gas. If the boiler being converted to LP gas is equipped with a Honeywell S8600F, this module must be replaced. Consult Crown Technical Support for the appropriate replacement.**

## CAUTION

**The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion.**

## CAUTION

**Orifice sizes shown in Tables 1c and 1d are for use at the altitudes indicated in these tables. Consult the factory for the correct orifice size if the boiler is to be installed at a different altitude.**

Conversion procedure:

1) Turn off all electrical power to the appliance.

2) Turn off the gas supply upstream of the boiler.

3) Remove the gas valve, main burners, main burner orifice, and pilot assembly originally provided with the boiler. On CWD series boilers, removal of the burners, orifice, and pilot assembly is most easily done by first removing the entire burner tray from the boiler. To remove the CWD burner tray:

a) Disconnect the gas supply line from the gas valve
b) Unplug the electrical connections at the gas valve and the ignition cable from the ignition module.
c) Remove the Intake Cover (key #39 in the installation manual parts list).
d) Remove the three 10-32 screws holding the Manifold Gasket Plate (key #58) in place. Remove the four 5/16-18 nuts and washers securing the burner tray in place (keys 8, 9).
e) Remove the burner tray from the boiler.

4) Install the new main burner orifices in the manifold. Before doing so, verify that the marking on each orifice matches that specified for the kit in Table 1. This marking is stamped on either a wrench flat or the side of the orifice in front of the wrench flats.

5) Install the new pilot assembly. If a new main burner with a pilot bracket was provided in the kit, discard the old main burner and mount the pilot on the new main burner.

6) Install the main burners.

7) Install the new gas valve provided with the kit. Reconnect the pilot line and the gas supply. For CWD boilers, reinstall the burner tray in the boiler. Reconnect all wiring.

8) Purge the gas supply line up to the boiler and check for leaks in accordance with the National Fuel Gas Code (ANS Z223.1) or the requirements of the authority having jurisdiction.

9) Replace any covers or panels removed during the conversion.

10) Make sure that the boiler and system are filled with water.

11) Verify that vent system is complete and free of obstructions before attempting to fire boiler. Make sure that the silicone cure time called for in the vent assembly instructions has passed before firing boiler.

12) Adjust thermostat to the highest setting.

13) Start the boiler using the lighting instructions on the boiler or in the installation manual's "Start-up and Check-out" section.

14) Upon initial start-up, the gas train will be filled with air. Even if the gas line has been completely purged of air, it may take several tries for ignition before a flame is established. Once a flame has been established for the first time, subsequent calls for burner operation should result in a flame on the first try.

15) Observe pilot burner flame and verify that it matches the illustration shown in the installation manual's "Start-up and Check-out" section.

16) Inspect the main burner flame and verify that it matches the illustration shown in the installation manual's "Start-up and Check-out" section. The flame should be stable and mostly blue. No yellow tipping should be present; however, intermittent flecks of yellow and orange in the flame are normal.

17) Check entire gas train for leaks using soap and water or other approved leak detection method while boiler is firing. Fix any leaks found immediately.

18) Check the manifold pressure and adjust if necessary. To do this, use the following procedure:

## WARNING

**Failure to follow the following procedure exactly could result in over-firing of the boiler and death or injury due to carbon monoxide poisoning.**

a) Connect a manometer to the inlet pressure tap on the gas valve. For the location of this tap, see the gas valve detail illustration in the installation manual's "Start-up and Check-out" section.

b) Check the line pressure with all gas appliances on and off. Verify that the inlet pressure is within the limits shown in Table 2 regardless of what combination of appliances is firing. If the inlet pressure falls outside of these limits, find and correct the cause of the problem before proceeding further.

c) On CWD boilers, disconnect the silicone regulator tube from the hose barb on the gas valve (See Figure 45 in the CWD installation manual).

d) Connect a manometer to the manifold (outlet) pressure tap on the gas valve. For the location of this tap, see the gas valve detail illustration in the installation manual's "Start-up and Check-out" section.

e) Read the manifold pressure. Refer to Table 2 for the appropriate setting.

f) If a manifold pressure adjustment is needed, make the adjustment by turning the regulator screw clockwise to raise the pressure and counter-clockwise to reduce the pressure. If a manifold pressure adjustment is made, recheck the inlet pressure to be certain that it is still within acceptable limits. Replace the cover screw on the regulator.

g) On CWD boilers, reconnect the silicone regulator tube disconnected in Step (c)

10) Use a combustion analyzer to check the CO level in the boiler flue gases. On AWR, AWI, BSI and CWI boilers, sample the flue gases directly over the heat exchanger (Figure 3). On BWF and CWD series boilers, sample the flue gases by inserting the probe into the vent terminal. The CO level in the flue gases should be less than 50PPM. Possible causes of elevated CO include, but are not limited to:

- Incorrect manifold pressure
- Incorrect orifice size for the fuel type and altitude
- Crooked or out-of-round main burner orifice (never attempt to drill orifice for these boilers in the field).
- Partially plugged flue passages
- Foreign material in burner ports or venturis
- Leak in the seal between the flue collector and heat exchanger
- Inadequate combustion air supply

Do not leave the boiler in operation with a CO level in excess of 50PPM - consult the factory if the cause of the elevated CO level cannot be identified and corrected.

11) Apply the "Boiler Conversion Label" to a conspicuous surface immediately adjacent to the boiler's rating plate. Fill in the date of the conversion and the name and address of the company making the conversion with a permanent marker.

12) Refer to the "Start-up and Checkout" section of the boiler installation manual and perform any checks not already completed.

## WARNING

**Failure to check the CO level in the flue gases or leaving the boiler in operation with an excessive CO level in the flue gases could result in injury or death from carbon monoxide poisoning.**

## Table 1a: Conversions from NATURAL to LP Gas, Altitudes less than 2000 ft

| | | | | | | | | Main Burner Orifice | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Kit PN | Models | Basic Burner Type | Ignition Type | Altitude (x1000ft) | Gas Valve | Pilot Assy | Main Pilot Burner | PN | Qty | Size |
| 300106 | AWI037S<br>AWI095S<br>AWI128S<br>AWI162S | 1" | Standing Pilot | Sea Level | VR8200C6040 | Q327A1915 | 150500 | 950336 | 9 | 1.25mm |
| 300103 | AWI061S | 1" | Standing Pilot | Sea Level | VR8200C6040 | Q327A1915 | 150500 | 950330 | 3 | #55 |
| 300107 | AWI195S | 1" | Standing Pilot | Sea Level | VR8300C4548 | Q327A1915 | 150500 | 950331 | 12 | #56 |
| 300110 | AWI229S<br>AWI262S<br>AWI295S | 1" | Standing Pilot | Sea Level | VR8300C4548 | Q327A1915 | N/A | 950331 | 18 | #56 |
| 300126 | AWI037E<br>AWI095E<br>BWF095E<br>AWI128E<br>BWF128E<br>AWI162E<br>BWF162E | 1" | Intermittent Ign. | Sea Level | VR8204C6018 | Q348A1259 | N/A | 950336 | 9 | 1.25mm |
| 300123 | AWI061E<br>BWF061E | 1" | Intermittent Ign. | Sea Level | VR8204C6018 | Q348A1259 | N/A | 950330 | 3 | #55 |
| 300130 | AWI195E<br>AWI229E<br>AWI262E<br>AWI295E | 1" | Intermittent Ign. | Sea Level | VR8304P4280 | Q348A1259 | N/A | 950331 | 18 | #56 |
| 300138 | BWF195E<br>BWF229E | 1" | Intermittent Ign. | Sea Level | VR8304P3522 | Q348A1259 | N/A | 950331 | 14 | #56 |
| 300603 | BSI069S<br>CWI069S | 1" | Standing Pilot | Sea Level | VR8200C6040 | Q327A1915 | 150503 | 950329 | 3 | #54 |
| 300605 | BSI103S<br>CWI103S<br>BSI138S<br>CWI138S | 1" | Standing Pilot | Sea Level | VR8200C6040 | Q327A1915 | 150503 | 950330 | 7 | #55 |
| 300606 | BSI172S<br>CWI172S | 1" | Standing Pilot | Sea Level | VR8200C6040 | Q327A1915 | 150503 | 950336 | 9 | 1.25mm |
| 300607 | BSI207S<br>CWI207S | 1" | Standing Pilot | Sea Level | VR8300C4548 | Q327A1915 | 150503 | 950336 | 12 | 1.25mm |
| 300609 | BSI241S<br>CWI241S<br>BSI276S<br>CWI276S | 1" | Standing Pilot | Sea Level | VR8300C4548 | Q327A1915 | 150503 | 950336 | 18 | 1.25mm |
| 300613 | BSI069E<br>CWI069E | 1" | Intermittent Ign. | Sea Level | VR8204C6018 | Q348A1259 | N/A | 950329 | 3 | #54 |
| 300615 | BSI103E<br>CWI103E<br>BSI138E<br>CWI138E | 1" | Intermittent Ign. | Sea Level | VR8204C6018 | Q348A1259 | N/A | 950330 | 7 | #55 |
| 300616 | BSI172E<br>CWI172E | 1" | Intermittent Ign. | Sea Level | VR8204C6018 | Q348A1259 | N/A | 950336 | 9 | 1.25mm |
| 300619 | BSI207E<br>CWI207E<br>BSI241E<br>CWI241E<br>BSI276E<br>CWI276E<br>BSI310E<br>CWI310E | 1" | Intermittent Ign. | Sea Level | VR8304P4280 | Q348A1259 | N/A | 950336 | 18 | 1.25mm |
| 300803 | CWD060E | 1" | Intermittent Ign. | Sea Level | VR8204P2294 | Q3481B1149 | N/A | 950331 | 4 | #56 |
| 300807 | CWD083E<br>CWD110E<br>CWD138E<br>CWD165E | 1" | Intermittent Ign. | Sea Level | VR8204P2294 | Q3481B1149 | N/A | 950332 | 12 | #57 |
| 300810 | CWD193E<br>CWD220E<br>CWD245E | 1" | Intermittent Ign. | Sea Level | VR8304P3522 | Q3481B1149 | N/A | 950332 | 18 | #57 |
| 301402 | AWR038 | 1" | Intermittent Ign. | Sea Level | VR8204C6018 | Q3481B1511 | N/A | 950345 | 2 | 1.25mm |
| 301403 | AWR070<br>AWR105<br>AWR140<br>AWR175 | 1" | Intermittent Ign. | Sea Level | VR8204C6018 | Q3481B1511 | N/A | 950346 | 10 | 1.20mm |
| 301404 | AWR210<br>AWR245<br>AWR280 | 1" | Intermittent Ign. | Sea Level | VR8304P4280 | Q3481B1511 | N/A | 950346 | 16 | 1.20mm |

## Table 1b: Conversions from LP to NATURAL Gas, Altitudes less than 2000 ft

| | | | | | | | | Main Burner Orifice | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Kit PN | Models | Basic Burner Type | Ignition Type | Altitude (x1000ft) | Gas Valve | Pilot Assy | Main Pilot Burner | PN | Qty | Size |
| 301204 | AWI037S<br>AWI095S | 1" | Standing Pilot | Sea Level | VR8200C6008 | Q327A1949 | N/A | 950301 | 5 | #45 |
| 301203 | AWI061S | 1" | Standing Pilot | Sea Level | VR8200C6008 | Q327A1949 | N/A | 950300 | 3 | #44 |
| 301206 | AWI128S<br>AWI162S | 1" | Standing Pilot | Sea Level | VR8200C6008 | Q327A1949 | N/A | 950302 | 9 | #46 |
| 301210 | AWI195S<br>AWI229S<br>AWI262S<br>AWI295S | 1" | Standing Pilot | Sea Level | VR8300C4134 | Q327A1949 | N/A | 950304 | 18 | #48 |
| 301224 | AWI037E<br>AWI095E<br>BWF095E | 1" | Intermittent Ign. | Sea Level | VR8204C6000 | Q348A1275 | N/A | 950301 | 5 | #45 |
| 301223 | AWI061E<br>BWF061E | 1" | Intermittent Ign. | Sea Level | VR8204C6000 | Q348A1275 | N/A | 950300 | 3 | #44 |
| 301226 | AWI128E<br>BWF128E<br>AWI162E<br>BWF162E | 1" | Intermittent Ign. | Sea Level | VR8204C6000 | Q348A1275 | N/A | 950302 | 9 | #46 |
| 301230 | AWI195E<br>BWF195E<br>AWI229E<br>BWF229E<br>AWI262E<br>AWI295E | 1" | Intermittent Ign. | Sea Level | VR8304P4298 | Q348A1275 | N/A | 950304 | 18 | #48 |
| 300626 | BSI069S<br>CWI069S<br>BSI103S<br>CWI103S<br>BSI138S<br>CWI138S<br>BSI172S<br>CWI172S | 1" | Standing Pilot | Sea Level | VR8200C6008 | Q350A1644 | 150502 | 950300 | 9 | #44 |
| 300627 | BSI207S<br>CWI207S | 1" | Standing Pilot | Sea Level | VR8300C4134 | Q350A1644 | 150502 | 950303 | 12 | #47 |
| 300629 | BSI241S<br>CWI241S<br>BSI276S<br>CWI276S | 1" | Standing Pilot | Sea Level | VR8300C4134 | Q327A1949 | 150500 | 950303 | 18 | #47 |
| 300636 | BSI069E<br>CWI069E<br>BSI103E<br>CWI103E<br>BSI138E<br>CWI138E<br>BSI172E<br>CWI172E | 1" | Intermittent Ign. | Sea Level | VR8204C6000 | Q348A1275 | N/A | 950300 | 9 | #44 |
| 300639 | BSI207E<br>CWI207E<br>BSI241E<br>CWI241E<br>BSI276E<br>CWI276E | 1" | Intermittent Ign. | Sea Level | VR8304P4298 | Q348A1275 | N/A | 950303 | 18 | #47 |
| 300813 | CWD060E | 1" | Intermittent Ign. | Sea Level | VR8204C2328 | Q3481B1131 | N/A | 950305 | 4 | #49 |
| 300817 | CWD083E<br>CWD110E<br>CWD138E<br>CWD165E | 1" | Intermittent Ign. | Sea Level | VR8204C2328 | Q3481B1131 | N/A | 950306 | 12 | #50 |
| 300820 | CWD193E<br>CWD220E<br>CWD245E | 1" | Intermittent Ign. | Sea Level | VR8304P2342 | Q3481B1131 | N/A | 950306 | 18 | #50 |
| 301302 | AWR038 | 1” | Intermittent Ign. | Sea Level | VR8204C6000 | Q3481B1636 | N/A | 950302 | 2 | #46 |
| 301303 | AWR070<br>AWR105<br>AWR140<br>AWR175 | 1” | Intermittent Ign. | Sea Level | VR8204C6000 | Q3481B1636 | N/A | 950303 | 10 | #47 |
| 301304 | AWR210<br>AWR245<br>AWR280 | 1” | Intermittent Ign. | Sea Level | VR8304P4298 | Q3481B1636 | N/A | 950303 | 16 | #47 |

## Table 1c: Conversions from NATURAL to LP Gas, Altitudes above 2000 ft

| | | | | | | | | Main Burner Orifice | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Kit PN | Models | Basic Burner Type | Ignition Type | Altitude (x1000ft) | Gas Valve | Pilot Assy | Main Pilot Burner | PN | Qty | Size |
| 300303 | AWI061S | 50mm | Standing Pilot | 8 to 9 | VR8200C6040 | Q327A1915 | N/A | 950359 | 2 | #55 |
| 300306 | AWI095S<br>AWI128S<br>AWI162S | 50mm | Standing Pilot | 6 to 9 | VR8200C6040 | Q327A1915 | N/A | 950358 | 5 | #54 |
| 300310 | AWI195S<br>AWI229S<br>AWI262S<br>AWI295S | 50mm | Standing Pilot | 6 to 9 | VR8300C4548 | Q327A1915 | N/A | 950358 | 9 | #54 |
| 300323 | AWI061E<br>BWF061E | 50mm | Intermittent Ign. | 8 to 9 | VR8204C6018 | Q348A1259 | N/A | 950359 | 2 | #55 |
| 300326 | AWI095E<br>BWF095E<br>AWI128E<br>BWF128E<br>AWI162E<br>BWF162E | 50mm | Intermittent Ign. | 6 to 9 | VR8204C6018 | Q348A1259 | N/A | 950358 | 5 | #54 |
| 300330 | AWI195E<br>AWI229E<br>AWI262E<br>AWI295E | 50mm | Intermittent Ign. | 6 to 9 | VR8304P4280 | Q348A1259 | N/A | 950358 | 9 | #54 |
| 300338 | BWF195E<br>BWF229E | 50mm | Intermittent Ign. | 6 to 9 | VR8304P3522 | Q348A1259 | N/A | 950358 | 7 | #54 |
| 300706 | BSI069S<br>CWI069S<br>BSI103S<br>CWI103S<br>BSI138S<br>CWI138S<br>BSI172S<br>CWI172S | 40mm | Standing Pilot | 7 to 10 | VR8200C6040 | Q327A1915 | 150542 | 950333 | 5 | #58 |
| 300709 | BSI207S<br>CWI207S<br>BSI241S<br>CWI241S<br>BSI276S<br>CWI276S<br>BSI310S<br>CWI310S | 40mm | Standing Pilot | 7 to 10 | VR8300C4548 | Q327A1915 | N/A | 950333 | 9 | #58 |
| 300716 | BSI069E<br>CWI069E<br>BSI103E<br>CWI103E<br>BSI138E<br>CWI138E<br>BSI172E<br>CWI172E | 40mm | Intermittent Ign. | 7 to 10 | VR8204C6018 | Q348A1259 | N/A | 950333 | 5 | #58 |
| 300719 | BSI207E<br>CWI207E<br>BSI241E<br>CWI241E<br>BSI276E<br>CWI276E<br>BSI310E<br>CWI310E | 40mm | Intermittent Ign. | 7 to 10 | VR8304P4280 | Q348A1259 | N/A | 950333 | 9 | #58 |
| 300823 | CWD060E | 1" | Intermittent Ign. | 7 | VR8204P2294 | Q3481B1149 | N/A | 950333 | 4 | #58 |
| 300827 | CWD083E<br>CWD110E<br>CWD138E<br>CWD165E | 1" | Intermittent Ign. | 7 | VR8204P2294 | Q3481B1149 | N/A | 950341 | 12 | #61 |
| 300830 | CWD193E<br>CWD220E<br>CWD245E | 1" | Intermittent Ign. | 7 | VR8304P3522 | Q3481B1149 | N/A | 950341 | 18 | #61 |
| 301603 | AWR070<br>AWR105<br>AWR140<br>AWR175 | 1” | Intermittent Ign. | 5 to 8 | VR8204C6018 | Q3481B1511 | N/A | 950332 | 10 | #57 |
| 301604 | AWR210<br>AWR245<br>AWR280 | 1” | Intermittent Ign. | 5 to 8 | VR8304P4280 | Q3481B1511 | N/A | 950332 | 16 | #57 |

## Table 1d: Conversions from LP to NATURAL Gas, Altitudes above 2000 ft

| | | | | | | | | Main Burner Orifice | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Kit PN | Models | Basic Burner Type | Ignition Type | Altitude (x1000ft) | Gas Valve | Pilot Assy | Main Pilot Burner | PN | Qty | Size |
| 300404 | AWI061S<br>AWI095S | 50mm | Standing Pilot | 7 | VR8200C6008 | Q327A1949 | N/A | 950352 | 3 | #42 |
| 300406 | AWI128S<br>AWI162S | 50mm | Standing Pilot | 7 to 8 | VR8200C6008 | Q327A1949 | N/A | 950351 | 5 | #41 |
| 300410 | AWI195S<br>AWI229S<br>AWI262S<br>AWI295S | 50mm | Standing Pilot | 7 to 8 | VR8300C4134 | Q327A1949 | N/A | 950351 | 9 | #41 |
| 300424 | AWI061E<br>BWF061E<br>AWI095E<br>BWF095E | 50mm | Intermittent Ign. | 7 | VR8204C6000 | Q348A1275 | N/A | 950352 | 3 | #42 |
| 300426 | AWI128E<br>BWF128E<br>AWI162E<br>BWF162E | 50mm | Intermittent Ign. | 7 to 8 | VR8204C6000 | Q348A1275 | N/A | 950351 | 5 | #41 |
| 300430 | AWI195E<br>BWF195E<br>AWI229E<br>BWF229E<br>AWI262E<br>AWI295E | 50mm | Intermittent Ign. | 7 to 8 | VR8304P4298 | Q348A1275 | N/A | 950351 | 9 | #41 |
| 300726 | BSI069S<br>CWI069S<br>BSI103S<br>CWI103S<br>BSI138S<br>CWI138S<br>BSI172S<br>CWI172S | 40mm | Standing Pilot | 7 to 8 | VR8200C6032 | Q350A1644 | 150540 | 950296 | 5 | #40 |
| 300729 | BSI207S<br>CWI207S<br>BSI241S<br>CWI241S<br>BSI276S<br>CWI276S<br>BSI310S<br>CWI310S | 40mm | Standing Pilot | 7 to 8 | VR8300C4183 | Q327A1949 | N/A | 950296 | 9 | #40 |
| 300736 | BSI069E<br>CWI069E<br>BSI103E<br>CWI103E<br>BSI138E<br>CWI138E<br>BSI172E<br>CWI172E | 40mm | Intermittent Ign. | 7 to 8 | VR8204C6000 | Q348A1275 | N/A | 950296 | 5 | #40 |
| 300739 | BSI207E<br>CWI207E<br>BSI241E<br>CWI241E<br>BSI276E<br>CWI276E<br>BSI310E<br>CWI310E | 40mm | Intermittent Ign. | 7 to 8 | VR8304P4298 | Q348A1275 | N/A | 950296 | 9 | #40 |
| 300833 | CWD060E | 1" | Intermittent Ign. | 5 to 10 | VR8204C2328 | Q3481B1131 | N/A | 950306 | 4 | #50 |
| 300837 | CWD083E<br>CWD110E<br>CWD138E<br>CWD165E | 1" | Intermittent Ign. | 4 to 9 | VR8204C2328 | Q3481B1131 | N/A | 950307 | 12 | #51 |
| 300840 | CWD193E<br>CWD220E<br>CWD245E | 1" | Intermittent Ign. | 4 to 9 | VR8304P2342 | Q3481B1131 | N/A | 950307 | 18 | #51 |
| 301503 | AWR070<br>AWR105<br>AWR140<br>AWR175 | 1" | Intermittent Ign. | 7 to 8 | VR8204C6000 | Q3481B1636 | N/A | 950305 | 10 | #49 |
| 301504 | AWR210<br>AWR245<br>AWR280 | 1" | Intermittent Ign. | 7 to 8 | VR8304P4298 | Q3481B1636 | N/A | 950305 | 16 | #49 |

**Table 2a: Natural Gas Inputs and Gas Pressures**

| | Sea Level | Inlet Pressure (in w.c.) | | Manifold Press. |
|---|---|---|---|---|
| Basic Model | Input (BTU/hr) | Min. | Max. | (in. w.c.) |
| AWI037 | 37000 | 5.0 | 14.0 | 3.5 |
| AWI061 | 61000 | 5.0 | 14.0 | 3.5 |
| AWI095 | 95000 | 5.0 | 14.0 | 3.5 |
| AWI128 | 128000 | 5.0 | 14.0 | 3.5 |
| AWI162 | 162000 | 5.0 | 14.0 | 3.5 |
| AWI195 | 195000 | 5.0 | 14.0 | 3.5 |
| AWI229 | 229000 | 5.0 | 14.0 | 3.5 |
| AWI262 | 262000 | 5.0 | 14.0 | 3.5 |
| AWI295 | 295000 | 5.0 | 14.0 | 3.5 |
| BWF061 | 61000 | 5.0 | 14.0 | 3.5 |
| BWF095 | 95000 | 5.0 | 14.0 | 3.5 |
| BWF128 | 128000 | 5.0 | 14.0 | 3.5 |
| BWF162 | 162000 | 5.0 | 14.0 | 3.5 |
| BWF195 | 195000 | 5.0 | 14.0 | 3.5 |
| BWF229 | 229000 | 5.0 | 14.0 | 3.5 |
| BSI069, CWI069 | 69000 | 5.0 | 14.0 | 3.5 |
| BSI103, CWI103 | 103000 | 5.0 | 14.0 | 3.5 |
| BSI138, CWI138 | 138000 | 5.0 | 14.0 | 3.5 |
| BSI172, CWI172 | 172000 | 5.0 | 14.0 | 3.5 |
| BSI207, CWI207 | 207000 | 5.0 | 14.0 | 3.5 |
| BSI241, CWI241 | 241000 | 5.0 | 14.0 | 3.5 |
| BSI276, CWI276 | 276000 | 5.0 | 14.0 | 3.5 |
| BSI310, CWI310 | 310000 | 5.0 | 14.0 | 3.5 |
| CWD060 | 60000 | 5.0 | 14.0 | 3.5 |
| CWD083 | 82500 | 5.0 | 14.0 | 3.5 |
| CWD110 | 110000 | 5.0 | 14.0 | 3.5 |
| CWD138 | 137500 | 5.0 | 14.0 | 3.5 |
| CWD165 | 165000 | 5.0 | 14.0 | 3.5 |
| CWD193 | 192500 | 5.0 | 14.0 | 3.5 |
| CWD220 | 220000 | 5.0 | 14.0 | 3.5 |
| CWD245 | 245000 | 5.0 | 14.0 | 3.5 |
| AWR038 | 38000 | 5.0 | 14.0 | 3.5 |
| AWR070 | 70000 | 5.0 | 14.0 | 3.5 |
| AWR105 | 105000 | 5.0 | 14.0 | 3.5 |
| AWR140 | 140000 | 5.0 | 14.0 | 3.5 |
| AWR175 | 175000 | 5.0 | 14.0 | 3.5 |
| AWR210 | 210000 | 5.0 | 14.0 | 3.5 |
| AWR280 | 245000 | 5.0 | 14.0 | 3.5 |

**Table 2b: LP Gas Inputs and Gas Pressures**

| | Sea Level | Inlet Pressure (in w.c.) | | Manifold Press. |
|---|---|---|---|---|
| Basic Model | Input (BTU/hr) | Min. | Max. | (in. w.c.) |
| AWI037 | 37000 | 11.0 | 13.0 | 10.0 |
| AWI061 | 61000 | 11.0 | 13.0 | 10.0 |
| AWI095 | 95000 | 11.0 | 13.0 | 10.0 |
| AWI128 | 128000 | 11.0 | 13.0 | 10.0 |
| AWI162 | 162000 | 11.0 | 13.0 | 10.0 |
| AWI195 | 195000 | 11.0 | 13.0 | 10.0 |
| AWI229 | 229000 | 11.0 | 13.0 | 10.0 |
| AWI262 | 262000 | 11.0 | 13.0 | 10.0 |
| AWI295 | 295000 | 11.0 | 13.0 | 10.0 |
| BWF061 | 61000 | 11.0 | 13.0 | 10.0 |
| BWF095 | 95000 | 11.0 | 13.0 | 10.0 |
| BWF128 | 128000 | 11.0 | 13.0 | 10.0 |
| BWF162 | 162000 | 11.0 | 13.0 | 10.0 |
| BWF195 | 195000 | 11.0 | 13.0 | 10.0 |
| BWF229 | 229000 | 11.0 | 13.0 | 10.0 |
| BSI069, CWI069 | 69000 | 11.0 | 13.0 | 10.0 |
| BSI103, CWI103 | 103000 | 11.0 | 13.0 | 10.0 |
| BSI138, CWI138 | 138000 | 11.0 | 13.0 | 10.0 |
| BSI172, CWI172 | 172000 | 11.0 | 13.0 | 10.0 |
| BSI207, CWI207 | 207000 | 11.0 | 13.0 | 10.0 |
| BSI241, CWI241 | 241000 | 11.0 | 13.0 | 10.0 |
| BSI276, CWI276 | 276000 | 11.0 | 13.0 | 10.0 |
| BSI310, CWI310 | 310000 | 11.0 | 13.0 | 10.0 |
| CWD060 | 60000 | 11.0 | 13.0 | 10.0 |
| CWD083 | 82500 | 11.0 | 13.0 | 10.0 |
| CWD110 | 110000 | 11.0 | 13.0 | 10.0 |
| CWD138 | 137500 | 11.0 | 13.0 | 10.0 |
| CWD165 | 165000 | 11.0 | 13.0 | 10.0 |
| CWD193 | 192500 | 11.0 | 13.0 | 10.0 |
| CWD220 | 220000 | 11.0 | 13.0 | 10.0 |
| CWD245 | 245000 | 11.0 | 13.0 | 10.0 |
| AWR038 | 38000 | 11.0 | 13.0 | 10.0 |
| AWR070 | 70000 | 11.0 | 13.0 | 10.0 |
| AWR105 | 105000 | 11.0 | 13.0 | 10.0 |
| AWR140 | 140000 | 11.0 | 13.0 | 10.0 |
| AWR175 | 175000 | 11.0 | 13.0 | 10.0 |
| AWR210 | 210000 | 11.0 | 13.0 | 10.0 |
| AWR280 | 245000 | 11.0 | 13.0 | 10.0 |

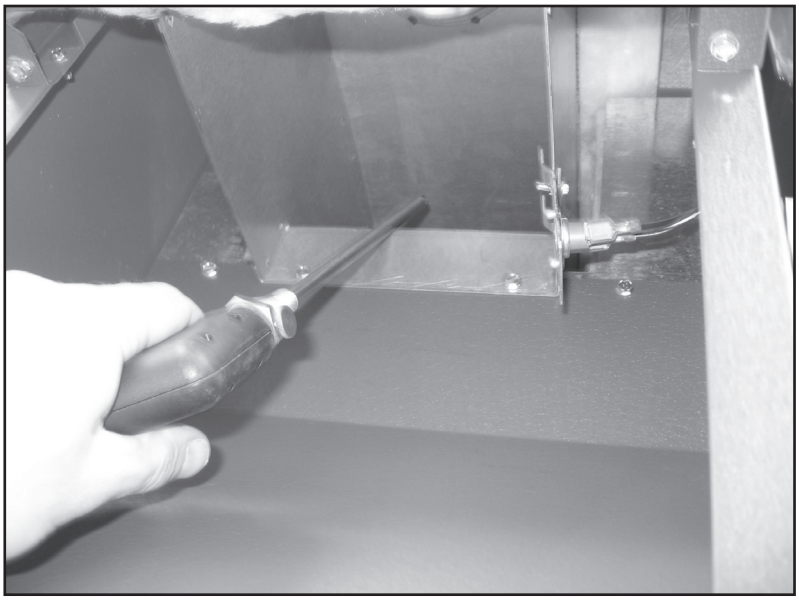

**Figure 3: Flue Gas Sample Location, AWR, AWI, BSI, CWI Series Boilers.**

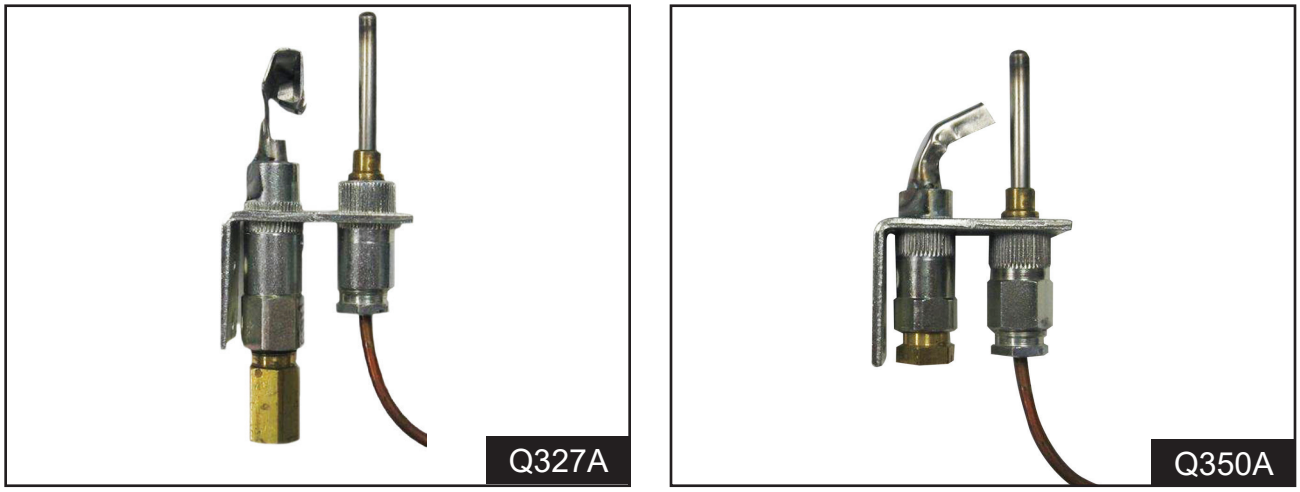


**Figure 4: Standing Pilot Burners with Thermocouple**

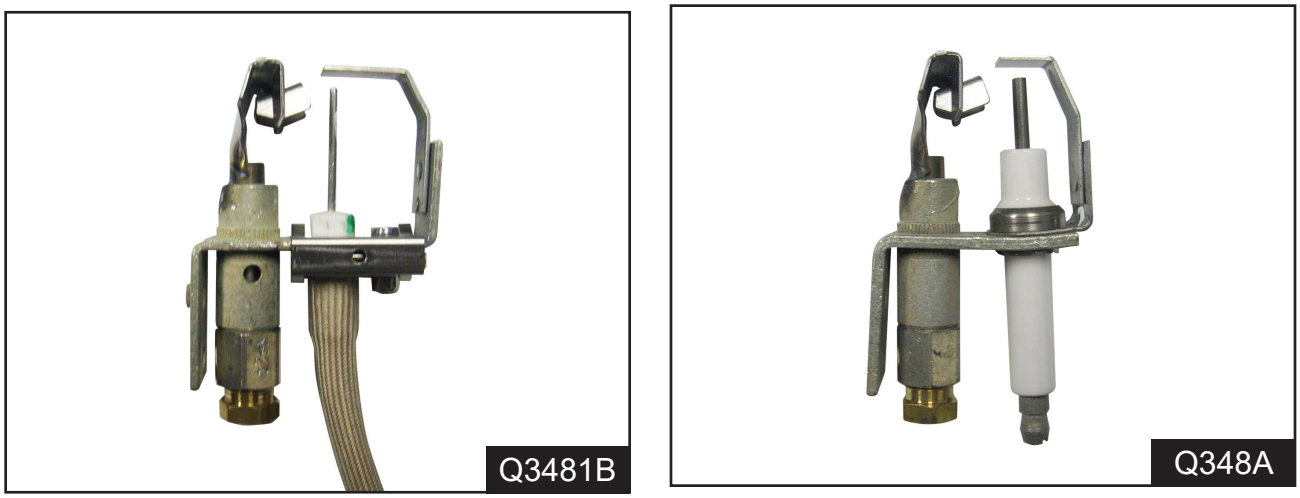


**Figure 5: Intermittent Pilot Burners with Ignitor-Sensors**


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