



# J99x Series BASO® Replacement Pilot Burners

## Introduction

This application note aids the appliance engineer or authorized service contractor in locating and testing a pilot burner in a standing pilot application. J99x Series replacement pilot burners are manufactured with a variety of tips and mounting configurations.

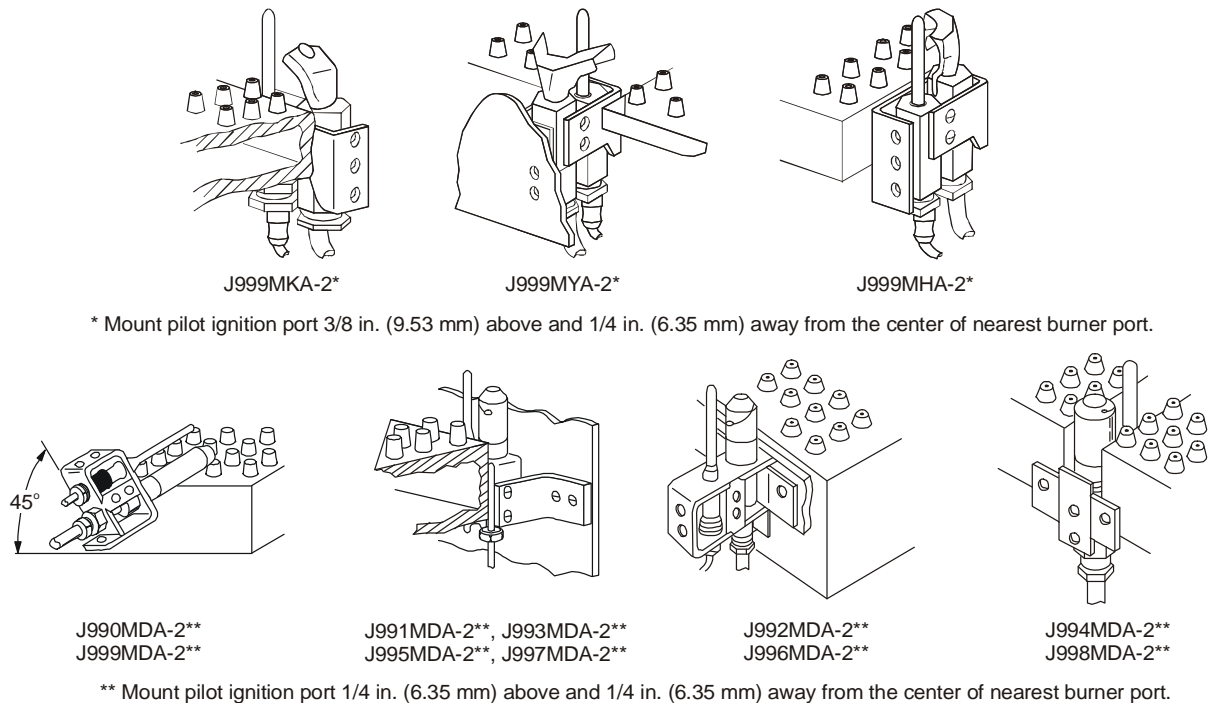
Representative types of mounting with standard pilots are illustrated in Figure 1. Dimensions are approximate and may vary, provided the requirements of good ignition are met.

**Note:** When a pilot is to be installed on an appliance already in the field, obtain the appliance manufacturer's recommendations for the correct pilot specification and location dimensions for the particular model.

## Location Considerations

Consider the following when locating the pilot burner:

- Locate the pilot burner so that it can be reached easily for lighting.
- Locate the pilot burner in a position that has a fixed relation to the main burner (see Figure 1).
- Locate the pilot burner in a position that receives incoming air and not products of combustion from the main burner. Locate the pilot burner where it will not be affected by an excessive draft of incoming air.
- Locate the pilot burner in such a position that it does not receive the full force of igniting or extinguishing puffs from the main burner.
- Locate the pilot burner in a position that allows removal for cleaning.



**Figure 1: Possible Mounting Positions**

Note: All replacement pilot burners come with a natural gas inlet fitting (Y90AA-32xx, -62xx, or -72xx) pre-assembled in the pilot burner. A LP gas inlet fitting (Y90AA-42xx) is included and may be used if required. Please contact the manufacturer of the appliance prior to making any changes to the original installation.

## After Installation

After installation, carefully make the following observations and tests:

1. Ensure that the main burner flames do not impinge on any part of the pilot burner.
2. Ensure that the pilot flame produces a satisfactory millivoltage as described in the *Thermocouple Output Test* section.
3. Ensure that the pilot burner ignites the main burner under all pilot burner conditions that maintain the safety shutoff device (BASO® power unit) in the On position. (See the *Safety Turn Down Test* section.)
4. Ensure that the pilot burner is not smothered or snuffed out:
  - when the main burner is ignited from a cold start
  - when the main burner is ignited with the appliance at the maximum temperature conditions of operation
  - with normal variation in air adjustments of the main burner
  - with rapid Off and On operation of the main burner with the combustion chamber cold
  - with rapid Off and On operation of the main burner with the combustion chamber hot
  - with continued operation of the main burner

### Thermocouple Output Test

When the pilot is applied properly, the thermocouple produces an open circuit millivoltage. Normal operating voltages must be obtained to provide trouble-free performance.

Using the Y99AB Test Kit (purchasable from a BASO Gas Products authorized distributor), attach the proper junction terminal of the millivolt meter to the thermocouple lead and measure the open circuit voltage. Allow at least five minutes for each meter reading. See Table 1 for specifications.

**Note:** Refer to the *Y99AB-4 BASO® Test Kit Application Note* for details.

**Table 1: Thermocouple Output**

Thermocouple Lead		Turn Down	Open Circuit Range	Minimum Fixed Load
Series Number	Code Number			
K14	80	4 mV	20-28 mV	8 mV
K15	88D, 88F, 88J, 88E, 88H	4 mV	20-28 mV	8 mV
K16	87D, 87F, 87K, J87D, K16K, L87D, N87D, K16S, JC87F, L87F	4 mV	25-35 mV	8 mV
K19	K19	4 mV	25-35 mV	8 mV

### Safety Turn Down Test

Observe the pilot flame under the various test conditions and ensure it appears stable at all times. Use a millivolt meter to determine the stability of the pilot flame. During the observation, or turn down test, position the doors of the appliance in their normal operating position. Pilot operation can be affected by draft conditions, appliance design, and recirculation of combustion products.



#### **WARNING: Risk of Fire or Explosion.**

Avoid accumulation of unburned gas and resulting personal injury or property damage by making sure the main burner lights under all pilot burner flame conditions that maintain the BASO power unit in the On position. Perform the following procedure to assure the location of the pilot with respect to the main burner is acceptable.

### Turn Down Test with Y99AB Test Kit

To perform the turn down test with the Y99AB Test Kit:

1. Disconnect the thermocouple lead from the BASO power unit.
2. Set the Y99AB test kit to use the 0-50 millivolts scale.
3. Connect the Y99AB test kit leads as shown in Figure 2. Connect lead 44549-8 to the thermocouple lead, and connect lead 44549-7 to the thermocouple connection of the BASO power unit (see Figure 2).
4. Push and hold down the reset button of the BASO power unit until it remains down.
5. Reduce the pilot flame by turning the manual B valve to the point where the open circuit reading on the Y99AB is not more than 4 millivolts.
6. Cycle the main burner On and Off at least three times. The main burner must ignite each time within 4 seconds.
7. Return the pilot to normal operation by turning the manual B valve to the fully opened position and reconnecting the thermocouple to the BASO power unit.

If you cannot secure ignition of the main burner when the millivoltage reading is 4 millivolts, the pilots are located improperly with respect to the main burner. Relocate the pilot and repeat Steps 5 and 6.

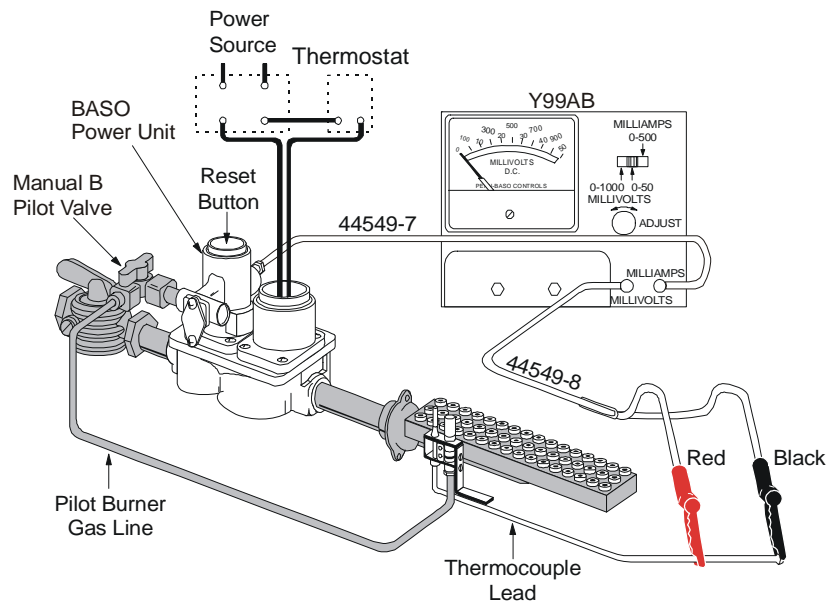


Figure 2: Turn Down Test Using Y99AB Test Kit

### Turn Down Test without Instruments

If you do not have the Y99AB Test Kit, perform the turn down test using the following steps:

1. Reduce the pilot flame by turning the manual B valve to a point where the pilot flame does not impinge on the thermocouple (see Figure 3).

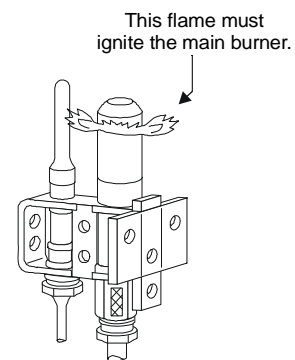


Figure 3: Turn Down Test without Instruments

2. Cycle the main burner On and Off at least three times. The main burner must ignite each time within four seconds.
3. Wait at least three minutes for the BASO power unit to drop out and extinguish the main burner flame.  
If the BASO power unit does not drop out, reduce the pilot flame further and repeat Steps 2 and 3.

If you cannot secure ignition of the main burner when the pilot flame has been reduced to the point at which the BASO power unit drops out, the pilot is located too far from the main burner and must be moved closer. Relocate the pilot and repeat Steps 2 and 3.

4. Return the pilot to normal operation by turning the manual B valve to the fully open position.

## Technical Data

<b>Product</b>	J99x Series BASO Replacement Pilot Burners	
<b>Materials</b>	Mounting Bracket	Plated Steel
	Pilot Tip	430 Stainless
	Pilot Body	Plated Steel
	Inlet Tip	Aluminum
	Inlet Body	Brass
<b>Maximum Temperature</b>	Mounting Bracket	825°F (441°C)
	Pilot Tip	1500°F (816°C), (D Tip 1350°F [732°C])
	Pilot Body	825°F (441°C)
	Inlet Tip	635°F (335°C)
	Inlet Body	750°F (399°C)
<b>Agency Listing</b>	None	
<b>Specification Standards</b>	ANSI Z21.20 CAN1-6.4 CAN/CSA-C22.2 No. 199-M89	

*Performance specifications are nominal and conform to acceptable industry standards. All agency certification of BASO products is performed under dry and controlled indoor environmental conditions. Use of BASO products beyond these conditions is not recommended and may void the warranty. Product must be protected if exposed to water (dripping, spraying, rain, etc.) or other harsh environments. The original equipment manufacturer or end user is responsible for the correct application of BASO products. Consult BASO Gas Products LLC for questionable applications. BASO Gas Products LLC shall not be liable for damages or product malfunctions resulting from misapplication or misuse of its products.*

Refer to the *J Series Pilot Burners/Y90 Series Inlet Fittings Product Bulletin (BASO-PB-PILOTS/Y90)* for necessary information on operating and performance specifications of this product.



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