



K Series BASO® Thermocouples

The K Series Thermocouples are designed for use in standing pilot ignition systems. They are used primarily with BASO brand automatic pilot controls and pilot burners; however, many models are interchangeable with thermocouples made by other manufacturers.

BASO Gas Products thermocouples are built to provide reliable performance and designed to simplify installation. Various constructions and lengths are available.



Figure 1: K Series Thermocouples

Features and Benefits	
<input type="checkbox"/> Heavy-Duty Construction	Promotes long life
<input type="checkbox"/> High-Performance Inner and Outer Element Material	Provides maximum output capacity
<input type="checkbox"/> Built-in Junction Block (Optional)	Allows for the addition of a high limit switch in the thermocouple circuit
<input type="checkbox"/> Nickel Plating (Optional)	Provides high ambient and corrosive atmosphere protection

Description

A thermocouple is constructed of two dissimilar metals, one is a solid element, and that is surrounded by a second, tubular-shaped piece. These metal elements touch only at a single welded endpoint. This endpoint, commonly known as the “hot” junction, is the tip of the thermocouple heated by the pilot flame.

The outer element is brazed to a brass connector sleeve attached to a copper tube, or is welded directly to a copper tube. Inside the copper tube is an insulated copper wire that is welded to the inner element of the thermocouple. This welded joint, together with the brazed joint between the copper tube or brass connector and the outer thermocouple element, forms the “cold” junction of the thermocouple. See

When there is a large temperature differential between the hot and cold junctions, an electrical current is generated. In its operating range, the electrical energy created is directly proportional to the temperature differential between the hot and cold junctions. The electrical output of a thermocouple is small (measured in millivolts) and the response time is slow (normally 30 to 45 seconds).

Care must be taken when applying a thermocouple to an appliance. Only a large temperature differential between the hot and cold junctions will create a useful millivolt output. The thermocouple should be positioned with 0.5 in. (12.7 mm) of its tip in the pilot flame. The cold junction should not be subjected to any large amounts of ambient heat. The lead should be routed away from the heat of the pilot and main burners. Electrical resistance increases with lead length, and will create a noticeable power drop.

Junction Block Thermocouples

K16F and K16J junction block thermocouples have a built-in junction block, which allows for the connection of the high limit switch. This type of application places the power unit of the pilot control in series with the limit switch and thermocouple so that all gas to the appliance will be shut off if pilot flame failure occurs or the high limit switch opens.

The correct length of the wire for connecting the limit switch to the junction block is determined by several factors: the size of the wire, the wire temperature, the thermocouple lead length, the power unit type, and the distance between the limit switch and the junction block. The junction block is 3.546 in. (90 mm) from the terminal end of the thermocouple for the K16F model and 2.343 in. (60 mm) for the K16J model.

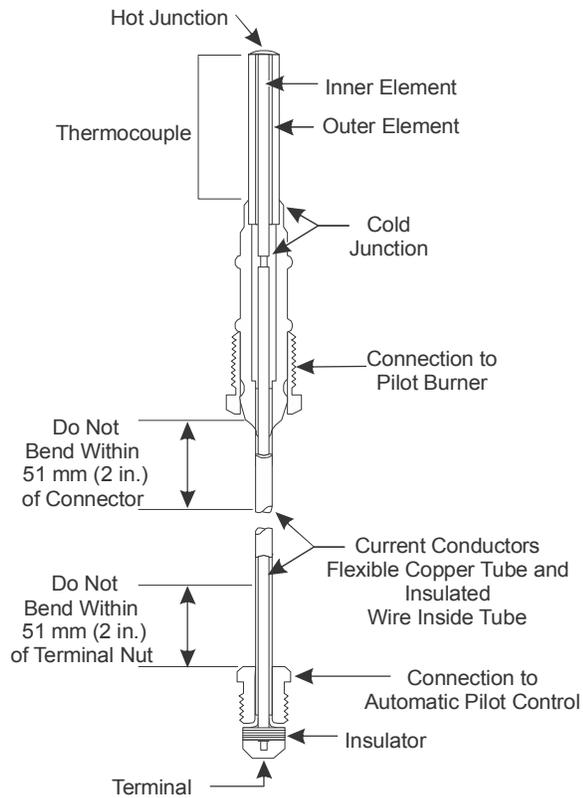


Figure 2: Cutaway View of a K15/K16 Thermocouple

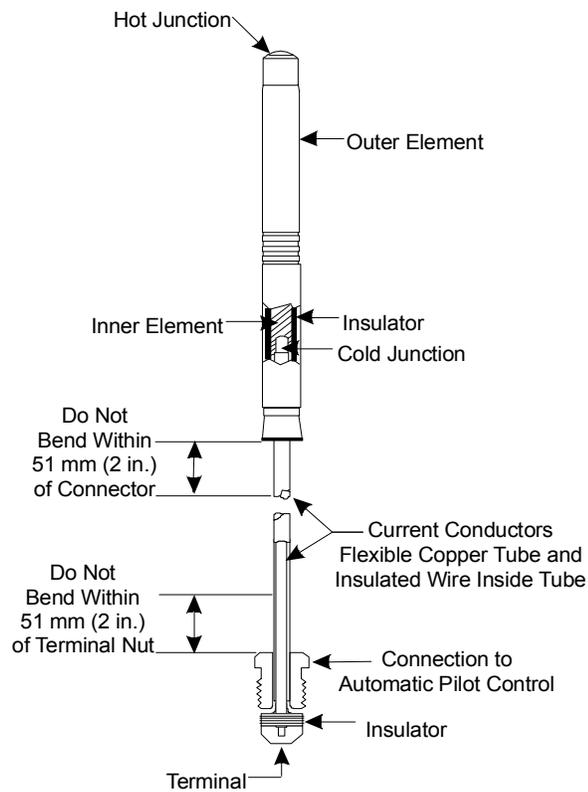
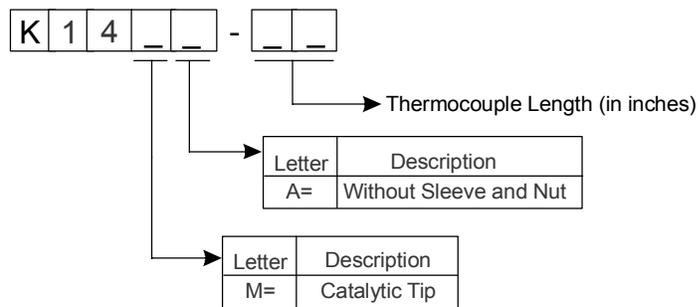


Figure 3: Cutaway View of a K19 Thermocouple

Ordering Information and Application Specifications



Figure 4: K14 Series Thermocouple



Lengths available in 14 in. (356), 36 in. (914 mm) or 72 in. (1,829 mm)

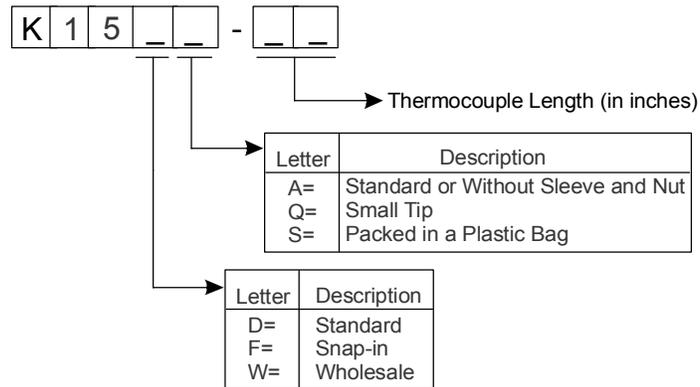
Figure 5: K14 Ordering Matrix

Table 1: K14 Application Specifications

Resistance in Ohms (18" Length): .0134 Ω
Open Circuit Millivoltage Range: 20-28 mV
Maximum Hot Junction Temperature: 1400°F (760°C)
Maximum Cold Junction Temperature: 850°F (454°C)
Maximum Copper Tube Temperature: 640°F (338°C)
Maximum Termination Temperature: 300°F (149°C)



Figure 5: K15DA Standard and K15FA Snap-in Thermocouple



Many lengths (normally in 6 in. [152 mm] increments) are available up to 12 to 48 in. (305 to 1,220 mm), but the length should be kept to a minimum.

The presence of a particular construction in this information does not guarantee its availability. Consult BASO Gas Products for available constructions.

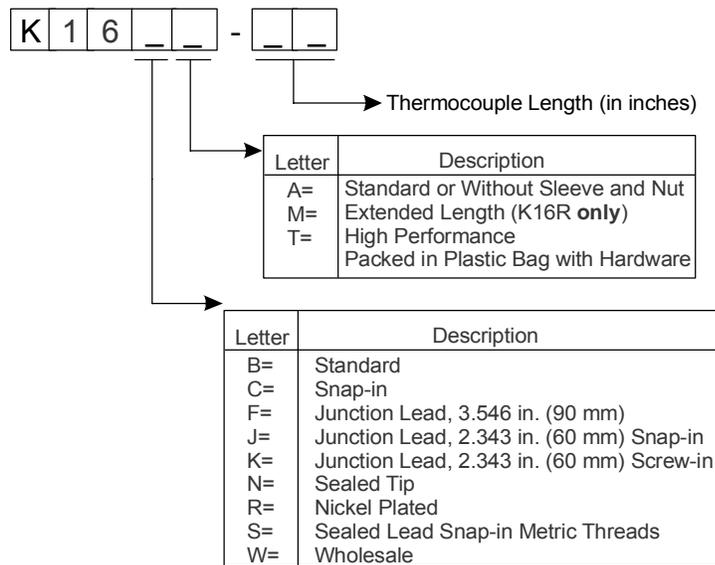
Figure 7: K15 Ordering Matrix

Table 2: K15 Application Specifications

Resistance in Ohms (18" Length): .0134 Ω
Open Circuit Millivoltage Range: 20-28 mV
Maximum Hot Junction Temperature: 1500°F (816°C)
Maximum Cold Junction Temperature: 850°F (454°C)
Maximum Copper Tube Temperature: 640°F (338°C)
Maximum Termination Temperature: 300°F (149°C)



Figure 6: K16BA Standard and K16FA Junction Lead Thermocouple



Many lengths (normally in 6 in. [152 mm] increments) are available up to 12 to 48 in. (305 to 1,220 mm), but the length should be kept to a minimum.

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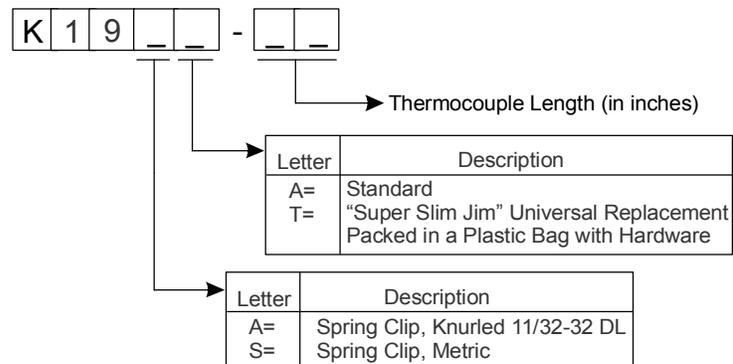
Figure 8: K16 Ordering Matrix

Table 3: K16 Application Specifications

Resistance in Ohms (18" Length): .0184 Ω
Open Circuit Millivoltage Range: 25-35 mV
Maximum Hot Junction Temperature: 1500°F (816°C)
Maximum Cold Junction Temperature: 850°F (454°C)
Maximum Copper Tube Temperature: 640°F (338°C)
Maximum Termination Temperature: 300°F (149°C)



Figure 7: K19AT Standard and K19SA Metric Thermocouple



Many lengths (normally in 6 in. [152 mm] increments) are available up to 12 to 48 in. (305 to 1,220 mm), but the length should be kept to a minimum.

The presence of a particular construction in this information does not guarantee its availability. Consult BASO Gas Products for available constructions.

Figure 9: K19 Ordering Matrix

Table 4: K19 Application Specifications

Resistance in Ohms (18" Length): .0134 Ω
Open Circuit Millivoltage Range: 25-35 mV
Maximum Hot Junction Temperature: 1300°F (704°C)
Maximum Cold Junction Temperature: 850°F (454°C)
Maximum Copper Tube Temperature: 640°F (338°C)
Maximum Termination Temperature: 300°F (149°C)

Technical Specifications

Product	K Series Thermocouples
Types of Gas	Natural, Liquefied Petroleum (LP), manufactured, mixed, or LP gas-air mixture
Operating Temperature	K14: -40 to 1400°F (-40 to 760°C) K15: -40 to 1500°F (-40 to 816°C) K16: -40 to 1500°F (-40 to 816°C) K19: -40 to 1300°F (-40 to 704°C)
Storage Temperature	-40 to 176°F (-40 to 80°C)
Packaging	Bulk pack supplies to original equipment manufacturer, (individual pack optional)
Bulk Pack Quantity	100
Bulk Pack Weight	Varies due to the different lengths of leads
Agency Listings	CSA Certificate Number 229521-1656071
Specification Standards	ANSI Z21.20

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.



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