

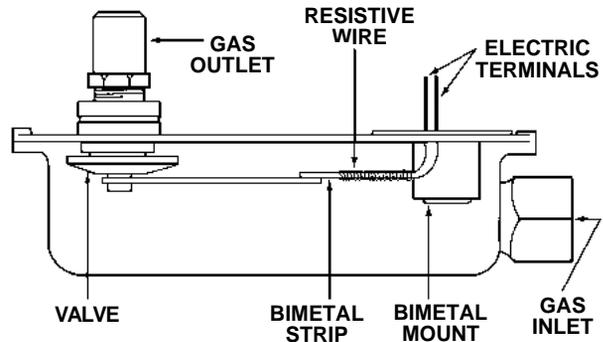
BIMETAL OVEN VALVES

HOW THE BIMETAL VALVE OPERATES

A bimetal device consists of two strips of dissimilar metals fused or bonded together to form a single metal strip. The two metals commonly used are steel and copper. Steel has a very low rate of expansion, while copper has a very high rate of expansion. If heat is applied to the bimetal strip, the copper will expand at a faster rate than the steel. If, as illustrated here, the copper is on the top, it will cause the bimetal strip to curve downward.

The major components of a bimetal valve are the valve, bimetal strip, resistive wire, electric terminals and bimetal mount. One end of the bimetal strip has the valve attached to it, while the other end is attached to the bimetal mount. The resistive wire is wrapped around the bimetal strip with the ends of the wire attached to the terminals. When electricity is applied across the terminals, current flows through the resistive wire. The resistive wire radiates heat to the bimetal, causing it to bend downward, opening the valve and allowing gas to flow.

There is a short time delay before the valve actually opens. This delay is caused by the resistive wire, which must get hot enough to heat the bimetal strip. The time delay of a bimetal valve can be varied at the factory by using different values of resistive wire. When a hot surface ignitor is



used, sufficient time must be allowed for the ignitor to reach ignition temperature. Bimetal valves used with Norton ignitors require a longer timer delay than those used with carborundum ignitors. Bimetal valves used with carborundum ignitors require a longer time delay than those used with flame switches.

IDENTIFICATION

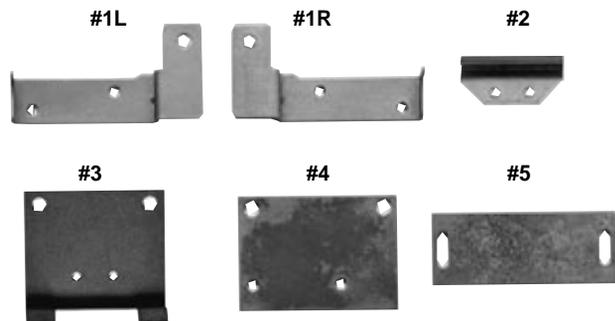
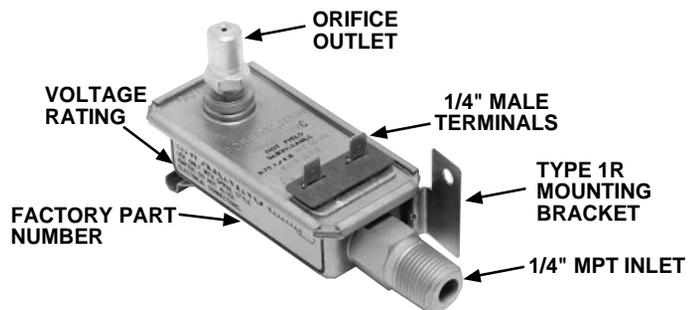
Bimetal-operated gas oven safety valves are voltage and position sensitive. It is important that a replacement control have the same voltage and mounting position as the original control for proper operation. To determine a replacement control you may use one of two methods.

1. IDENTIFICATION NUMBERS

- A. Determine any and all identification numbers stamped on the body of the original control.
- B. Consult cross-reference. All available Robertshaw manufactured bimetal operated Gas Oven Safety Valves are cross-referenced by 1) Robertshaw Factory Number, 2) Eaton Factory Number, 3) OEM by name and part number.
- C. Remember safe operation requires correct voltage, amperage and mounting position.
 - 1) Determine proper amp draw by using a wrap-a-round meter. The ignitor may continue to glow, but proper amp draw is essential for proper operation.
 - a) Norton ignitors should have a 3.2 - 3.6 amp draw.
 - b) Carborundum ignitors should have a 2.5 - 3.0 amp draw.

2. MATCH SPECIFICATIONS

- A. Determine voltage.
 - 1) 120 volt – Used with Flame Switches.
 - 2) Used with flat style Norton Ignitors.
 - 3) Used with round style Carborundum Ignitors.
- B. Determine Gas Inlet type and size.
- C. Determine Gas Outlet type and size.
- D. Determine Electrical Connection (terminals) type and size.
- E. Determine Mounting Bracket.



THE MOUNTING BRACKETS SHOWN ARE FACTORY INSTALLED TO THE BIMETAL VALVE. BRACKETS ARE NOT AVAILABLE SEPARATELY.