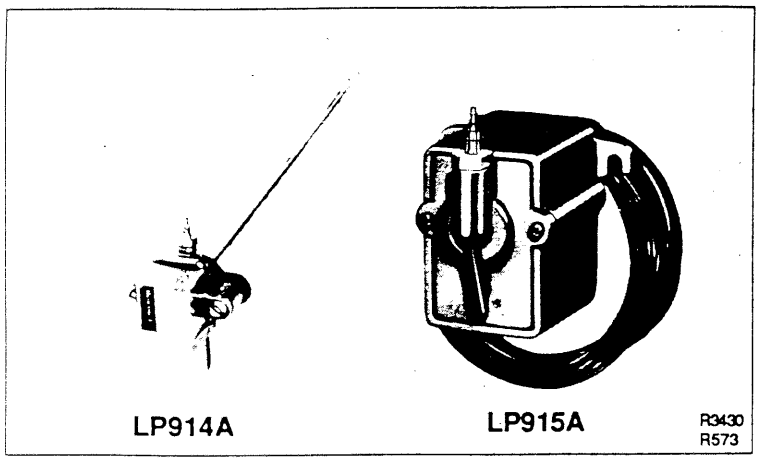



# LP914A and LP915A Pneumatic Temperature Sensor

Engineering Data

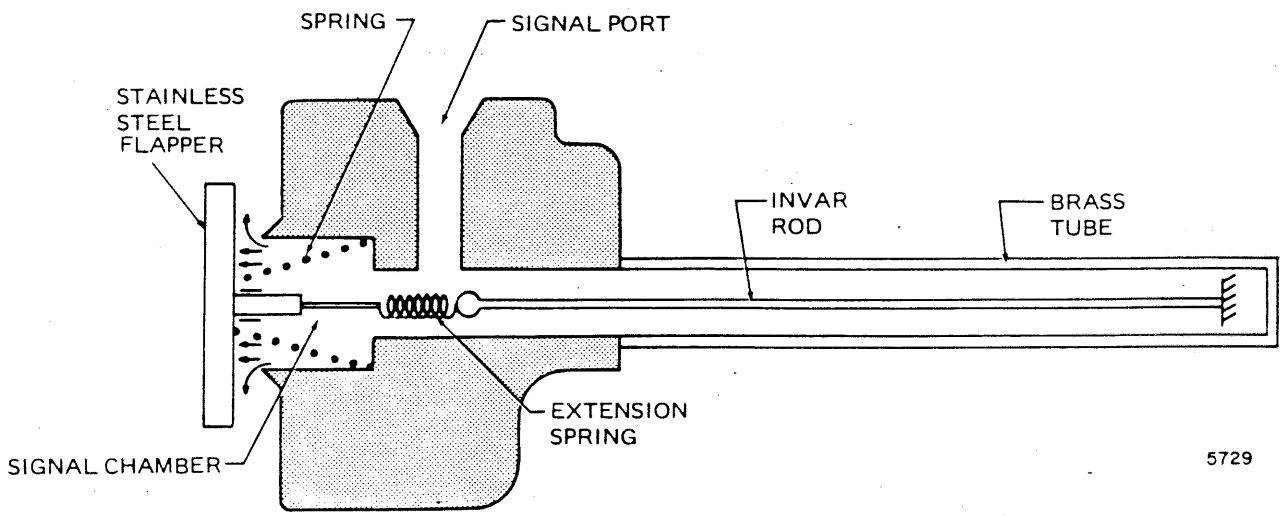
## Introduction

The LP914A and LP915A temperature sensors provide a linear relationship between temperature sensed and pressure output.

The LP914A proportioning type sensor consists of an invar (inert) rod inside a brass tube. Versions of the LP914, used for sensing outdoor air temperature, have a 12-inch inert section for passage through a wall. Ambient temperature surrounding the head and inert section has a negligible effect on the sensing accuracy. They can also be used for sensing water temperature using available immersion well.

Air consumption for both the LP914A and LP915A is .019 scfm (540 sccm).

## Operation




Cross Section of LP914A.

An increase in temperature causes an increase in sensing output pressure. The stainless steel flapper is held in place over the signal chamber by the extension spring. The force of the air on the flapper disturbs the balance permitting a flow around the flapper. As the temperature rises, the brass tube expands, pulling the attached invar rod with it. The repositioning of the rod changes the force on the extension spring causing the flapper to move closer to the signal chamber. Air flow around the diaphragm is reduced, increasing the pressure within the signal chamber.

Air pressure increases until the force on the flapper equals the force of the extension spring. The resulting output pressure varies proportionate to the change in temperature.

As temperature decreases, the brass tube contracts to lighten the force on the extension spring permitting the air pressure from the chamber to reposition the flapper. This decreases the sensing proportionate to the temperature change.

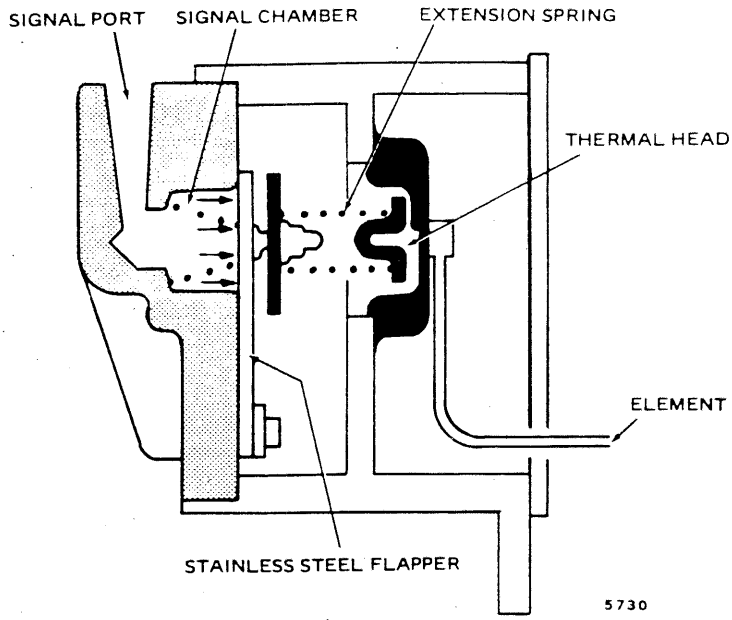
NOTE: Due to the heat flow from the sensing element to the head and radiated to the air, a temperature gradient forms along the sensing element. To overcome this, insulate the head from the medium if extreme accuracy is desired.

**CAUTION**

Do not insulate the head if there is a danger of the sensed medium going below 32F (0 C), as the valve unit will freeze if moisture is present.

The LP915A sensor operates like the LP914A except that a liquid pressure change in the thermal head does the work of the rod and tube.

A rise in temperature forces the flapper closer to the signal chamber, increasing the pressure within the chamber. A decrease in temperature relieves the force on the flapper and air flow around the flapper increases, reducing the sensing pressure.




LP915A Internal Construction.

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