

13.4.2 Resistance Pressure Transducer

Measurement in the resistive type of transducer is based on the fact that a change in pressure results in a resistance change in the sensing elements. Resistance pressure transducers are of two main types. First, the electromechanical resistance transducer, in which a change of pressure, stress, position, displacement or other mechanical variation is applied to a variable resistor. The other resistance transducer is the strain gauge, where the stress acts directly on the resistance. It is very commonly used for stress and displacement measurement in instrumentation.

In the general case of pressure measurement, the sensitive resistance element may take other forms, depending on the mechanical arrangement on which the pressure is caused to act.

Figure 13.1(d) and (e) show two ways by which the pressure acts to influence the sensitive resistance element, i.e. by which pressure varies the resistance element. They are the bellow type, and the diaphragm type. (Yet another is the Bourdon tube of pressure gauge).

In each of these cases, the element moved by the pressure change is made to cause a change in resistance. This resistance change can be made part of a bridge circuit and then taken as either ac or dc output signal to determine the pressure indication.

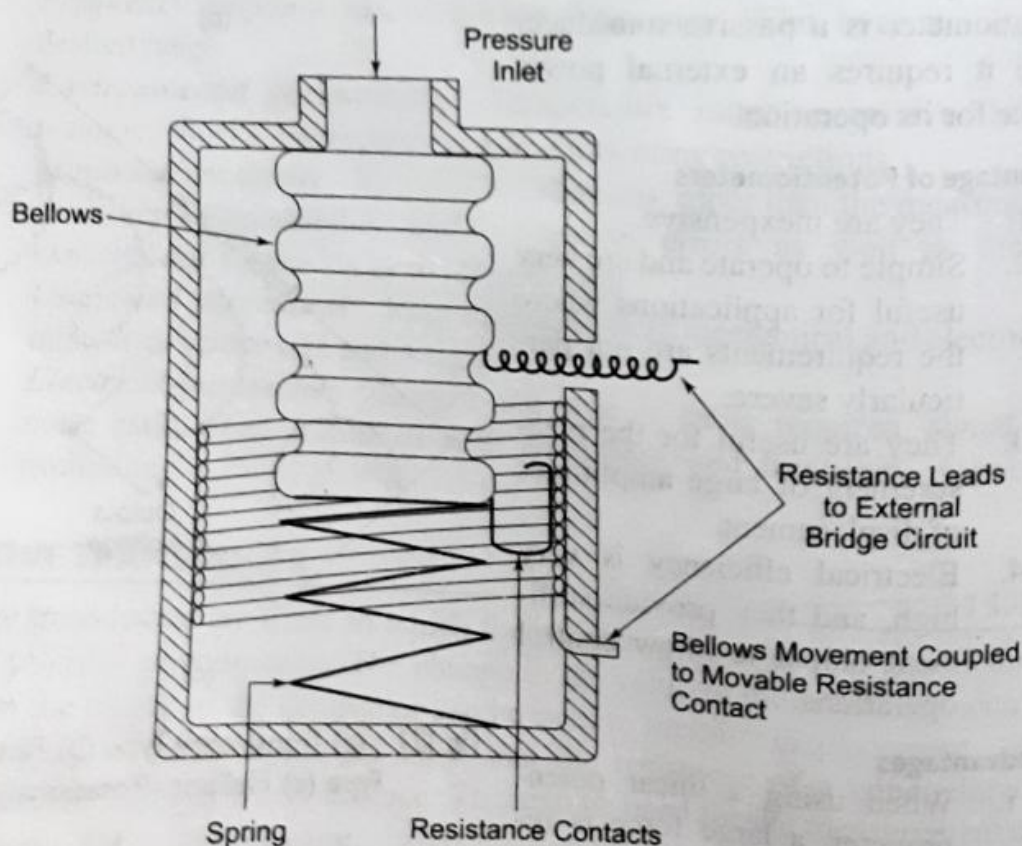


Fig. 13.1(d) Resistance pressure transducer

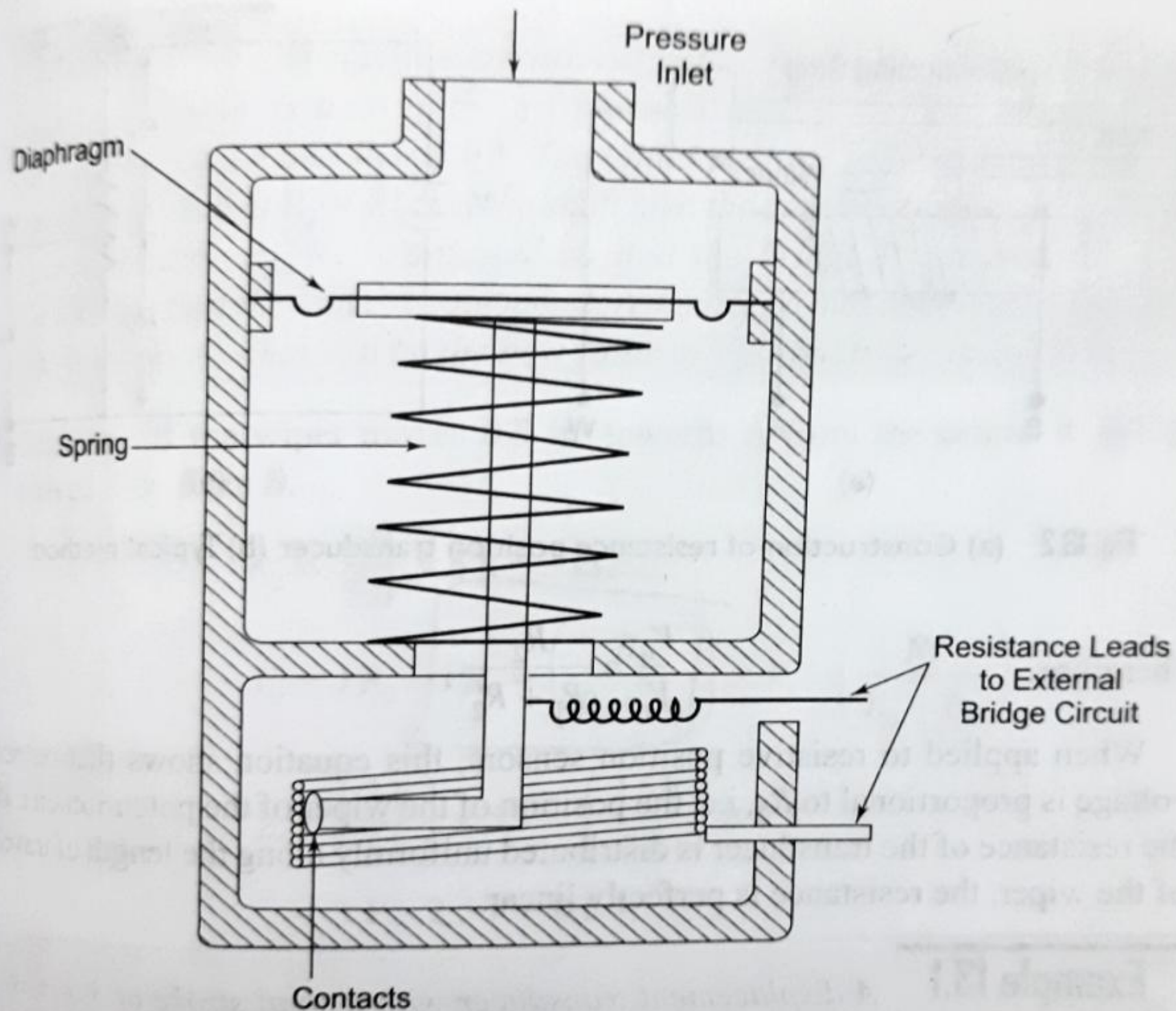


Fig. 13.1(e) Sensitive diaphragm moves the resistance contact