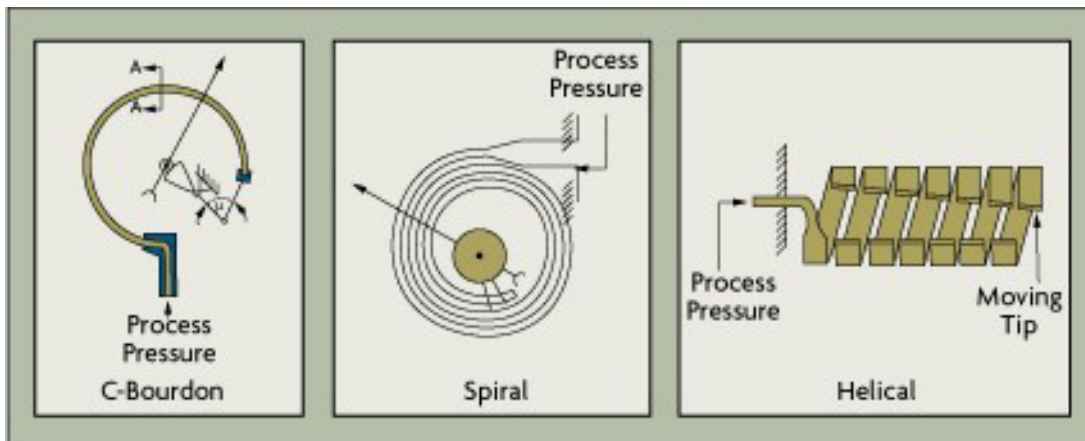


PRESSURE GAUGE - BOURDON TUBES

What are bourdon tubes and how do they work?

Bourdon tube pressure gauges are the most common type in many areas and are used to measure medium to high pressures. They cover measuring ranges from 600 millibar to 4,000 bar. The measuring element is a curved tube with a circular, spiral or coiled shape, commonly called a bourdon tube. This tube moves outward when the pressure inside the tube is higher than the external pressure, and inward when the internal pressure is lower. This motion is proportional to the pressure to be measured, and it is coupled to the pointer mechanism.



C-type bourdon tube – C-type bourdon tubes are fabricated by flattening the side of a hollow tube, then bending the tube into the shape of a “C.” One end of the tube is sealed, and the other end is fixed to a support base. The material of the tube is selected for its elastic properties because it can deform under pressure then return to its original shape when pressure is removed. The actual amount of tip displacement is relatively small, about 6mm. The small and nonlinear tip-motion characteristics are compensated for mechanically which is coupled to the pointer mechanism.

Spiral-type bourdon tube – One limitation of the C-type bourdon tube is the relatively small amount of tip movement. A spiral-type bourdon tube provides more tip movement. The spiral-type tube works under the same observed principles as the C-type, but as the applied pressure increases, the spiral uncoils. Because of the increased tip movement, mechanical amplification is not normally needed. This results in an increase in sensitivity and accuracy because there is no lost motion from loose or sticking links, levers, or gears.

Helical-type bourdon tube – A helical-type bourdon tube provides even greater tip movement than the spiral-type. High-pressure helical-types might have as many as twenty coils, while low-pressure helical-types might have two or three coils. Since the change in tip motion decreases as the applied pressure becomes larger, adding more coils compensates for this motion decrease.

A range of pressure gauges are available from brannan.co.uk or contact sales@brannan.co.uk for more information.

