Measuring Pressure with a Bourdon Tube Pressure Gauge

A Bourdon Tube Pressure Gauge is one of the original visual pressure measurement instruments, invented by Frenchman, Eugene Bourdon. The gauge was designed in 1849 and is still one of the most widely used pressure gauges. MGA Controls explore the operation of a bourdon tube pressure gauge, the advantages of the model and Bourdon tube application.

What is a Bourdon tube used for?
A bourdon tube is used to measure pressure in a system, giving the user visual indication of the pressure level, ensuring the amount of pressure doesn’t exceed the maximum level or stoop too low. There are many pressure gauges, however the bourdon gauge is probably one of the most common. The correct measurement of pressure ensures the system works effectively, protecting other equipment or systems in the plant. Almost all modern pressure gauges will be based on the model from 1849, due to the extreme accuracy, linearity and sensitivity of the bourdon gauge.

Workings of a bourdon gauge
The gauge can measure pressure up to 1600 bar and works by using the pressure of the medium acting on the inside of the tube, causing the tube to react, trying to straighten out. The movement in the non-clamped end of the tube is translated into a mechanical movement through linkages and the pointer moves around the dial, indicating the pressure.

There are three types of bourdon pressure gauges

- ‘C’ type bourdon tube
- Spiral type bourdon tube
- Helical type bourdon tube

The application of a bourdon tube rarely differs in function; however, the type of bourdon gauge will measure different volumes of pressure. For example, a ‘c’ type tube can measure pressure up to 1600 bar, while higher pressures should be measured using either a spiral or helical type bourdon tube. In order to ensure your gauge is working efficiently, the right tube should be used for the amount of pressure.

How to read a bourdon tube
Reading the pressure measurement on a bourdon tube is extremely easy and is one of the main reasons why the design is so widely popular. The reading is visual and appears on a dial face at the front of the pressure gauge. Following the mechanical movements in the gauge, the pointer on the front of the dial will move accurately, indicating the pressure in the machine. Often, the tube will measure the pressure in both bar and psi (per square inch) providing exact results.

Buying a bourdon gauge from MGA Controls
MGA Controls are leading instrumentation suppliers. We have a wide range of pressure gauges, including the bourdon tube available to purchase from stock. If you are looking to buy a gauge for a new machine or simply to replace an old one, visit our online store, we are sure you will find what you’re looking for. For more information, contact our technical team today, they will be able to answer any questions you may have.