

5. Types of Load Cells

Load cells can be classified using the following criteria.

1. Direction of Loading

When classified by the direction of load detection, load cells can be divided into the following types: tension, compression, alternating, and bending.

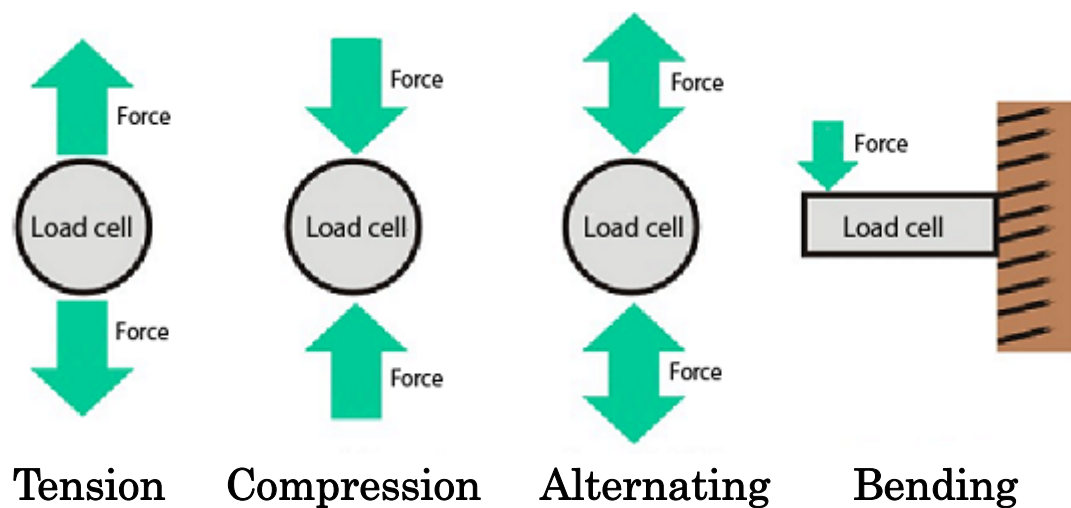


Figure 5.1

2. Precision

Based on precision, load cells can be classified as ultra precision, precision, standard, and general-purpose.

3. Shape of Spring Material

The shape of the spring material often determines the characteristics of the load cell.

4. Air tightness

4.1. Hermetic (Hermetic Seal)

This type encloses the areas of the strain gauges within a case and shields them from the outside air. In general, the interior of the case is filled with inactive gas, anticipating that the load cell be used under poor environmental conditions. A mechanism such as a diaphragm or bellows is used so that the case does not affect the bending of the spring material.

4.2. Open

When the rated capacity is small, attaching a temperature-proof case compromises load cell accuracy. With an open type, soft resin or rubber is used as the temperature-proof material. Although its environmental resistance is weaker than the hermetic type, there are few problems when used in an ordinary environment.

4.3. Explosion-Proof

Due to its structure, this type can be certified as flame proof.

5. Outer Shape

Load cells are often classified by their outer shape. Classifications include the can type, the S type, the washer type, and the beam type.

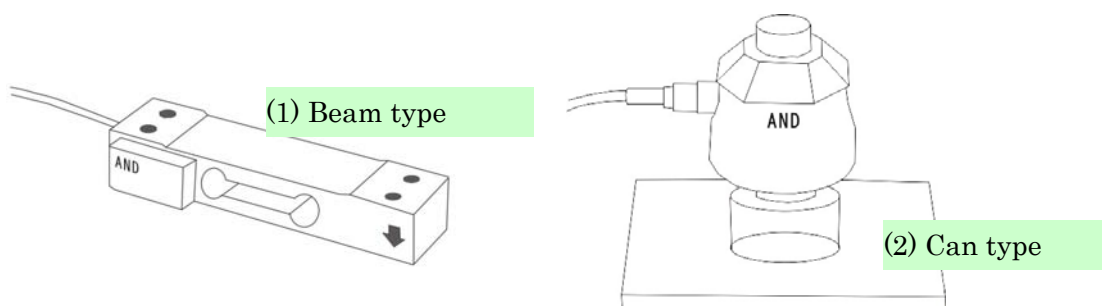




Figure 5.2

6. Other Classifications

6.1. Single-Point and Multi-Point Types

The single-point type is used when making a scale with one load cell whereas the multi-point type is used when making a scale with multiple load cells.

With the single-point type, it is possible to make a scale simply by putting a weighing pan on the load cell since the corner errors are already corrected.

With the multi-point type, three or four load cells are generally used to make a scale. The outputs from these load cells are combined using a summing box and the adjustable resistors of the summing box are adjusted to control any corner errors.