

## 8. Other Characteristics

In “Chapter 3,” the characteristics previously mentioned in sections 1 – 7 are described as typical load cell specifications mentioned in catalogs. However, depending on the intended use of the load cell, specifications such as those described here in this section may be necessary.

### 8.1. Fatigue Test

When a load cell is used for a checker scale, fatigue lifetime is important because there will be a large number of loadings. Figure 3.8 shows fatigue test data for the LC4103—K100.



LC4103-100

Single point load cell / platform scale type

Medium-sized (400 × 600 mm) platforms can be used (already adjusted to correct four corners). Temperature compensation for both zero and span. A load can be applied from above or below by pulling downward.

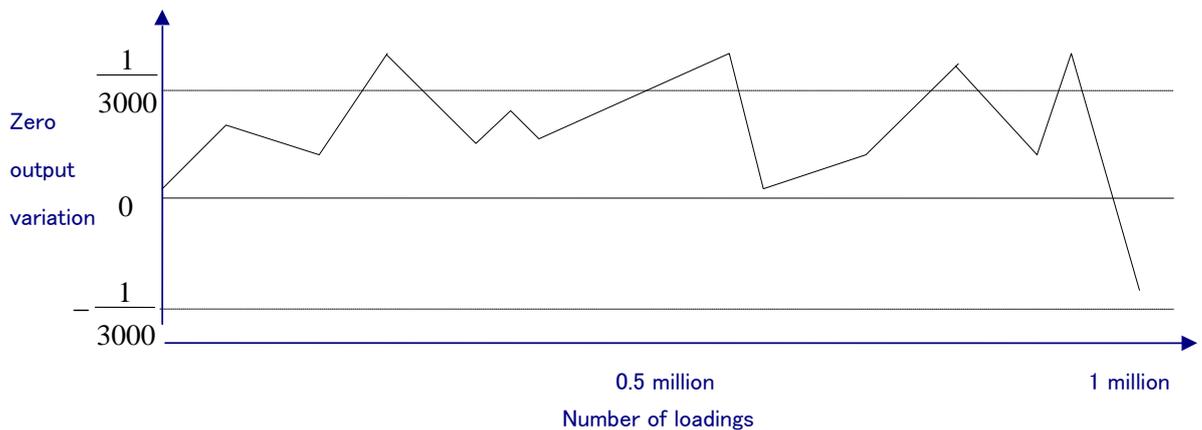
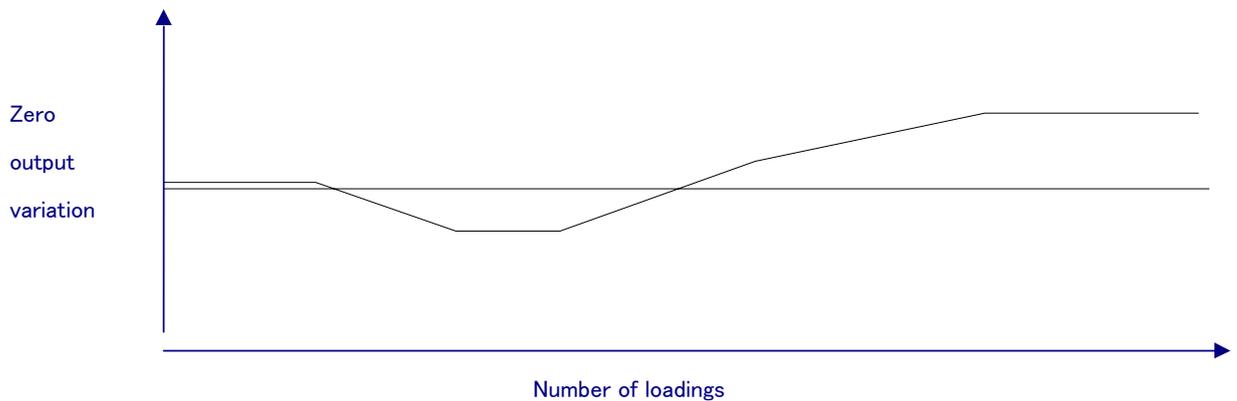


Figure 3.8

Test conditions: On a load cell with a 100kg rated capacity, a load of 200kg was applied in the cycle once every two seconds, and the zero output was recorded each time.

Figure 3.9 is the data when the rated capacity was loaded in the cycle 2 times /sec.



**Figure 3.9**

## 8.2. Natural Frequency Test

A load cell that has a high natural frequency is suitable when measuring dynamic force or the load cell is installed on a vibrating surface. A load cell whose natural frequency is low will be significantly deformed by loading and is therefore more suited for instruments with stoppers, such as platform scales. Natural frequencies vary depending on the structure of spring materials and the size of loadings such as tare and the amount measured. In general, the Roberval-type spring material has a low natural frequency, whereas the column-type spring material has a high natural frequency. Also, the larger the rated load, the lower the natural frequency becomes. Natural frequencies range widely from several 10Hz to several Hz.

## 8.3. Power-On Zero Drift

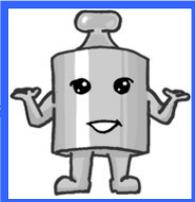
The load cell output immediately after turning on the power will drift due to rising gauge temperature.

## 8.4. Immersion Test

An immersion test is necessary when there is a possibility that a load cell will be immersed into water or another liquid. It is possible that zero output will vary greatly because of the immersion of the spring material. In these circumstances, it will be necessary to coat the surface of the spring material.

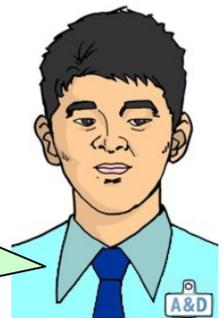
## 8.5. Effect of Temperature

Strain gauges are susceptible to temperature changes and change the zero output of the load cell. Most load cells are compensated for temperature changes.



A load cell engineer says

The OIML (International Organization of Legal Metrology) established international recommendations titled “Metrological Regulation for Load Cells.” Each member country of the OIML strives to ensure that their local regulations are consistent with the OIML’s recommendations.



Mr. S