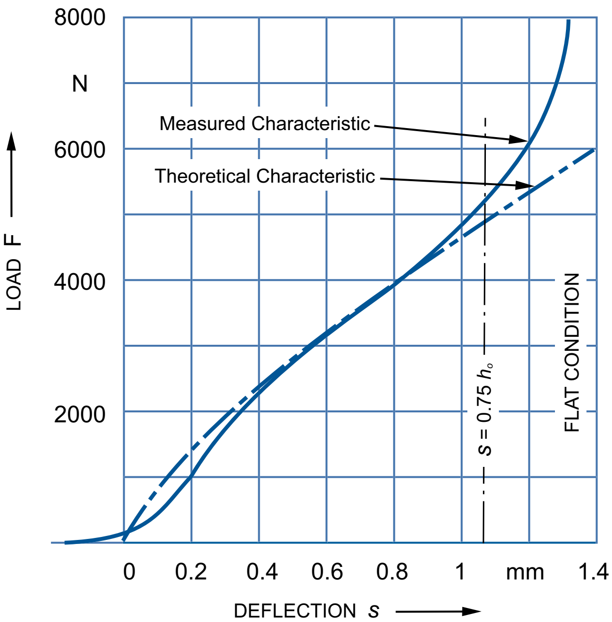
DEFLECTION AND LOAD CHARACTERISTICS

THEORETICAL VERSUS MEASURED DEFLECTION



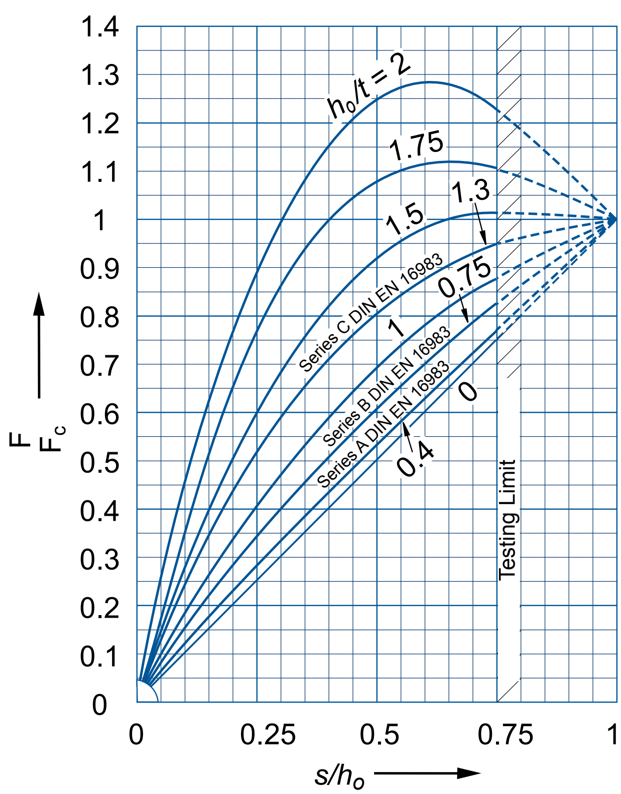
At the lower range, the actual measured curve departs slightly from the theoretical due to residual stresses.

In the mid range – the usual working range – the actual measured deflection very closely coincides with the theoretical.

As the deflection increases, the force moment arm shortens and the force required increases sharply. When the s/h_o ratio exceeds 0.75, the deviation from the theoretical increases sharply. Accordingly, force/deflection predictability is limited to 75% of total deflection (h_o).

The graph demonstrates the characteristic of a DIN EN 16983 (formerly DIN 2093) Disc Spring, Group 2, Series B 50 x 25.4 x 2.

LOAD/DEFLECTION RELATIONSHIP



F_c is the design force of the Disc Spring in the flattened position.

The load/deflection curve of a single Disc Spring is not linear. Its shape depends on the ratio of cone height (h_o) to the thickness (t) (h_o/t). If the ratio is small, 0.4 (DIN Series A), the characteristic is virtually a straight line. The load deflection becomes increasingly curved as the ratio h_o/t increases.

Up to a ratio of 1.5, Disc Springs may safely be taken to the flat position.

At a ratio of 1.5 the curve is flat for a considerable range of deflection. This is a useful consideration for wear compensation.

Above 1.5 the Disc Spring exhibits increasingly regressive characteristics and is capable of push-through and therefore needs to be fully supported.

At ratios over 2, the Disc Springs may invert when taken towards the flat position.

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