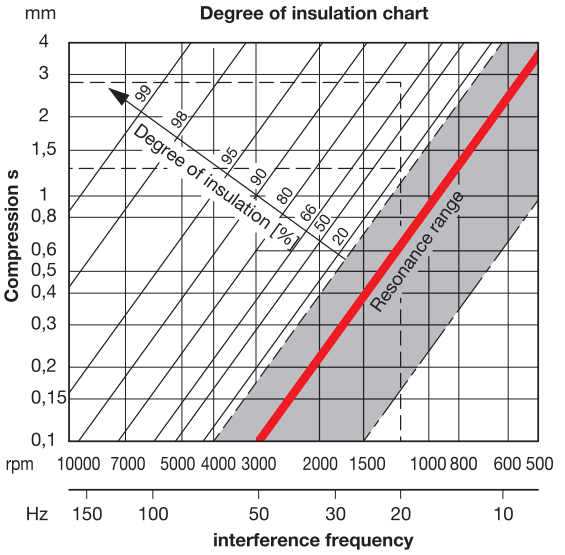
Determining the suitable levelling elements and the maximum degree of insulation



Technical data

Interference frequency [Hz]:
is the frequency emanating from a machine, e.g. the machine main shaft speed [rpm].

Static load F [N]:
is the load acting on each vibration-damping element (levelling element).

Degree of insulation [%]:
is the measure for absorbing the interference frequency (damping).

Compression s [mm]:
is the change in height of the damping element (spring excursion).

Stiffness R [N/mm]:
is the load which causes a damping element to be compressed by 1 mm (spring rate).

First, the static load F for each levelling element must be determined. For well arranged levelling elements and the resulting even distribution of the load F, the static load is calculated using the following equation:

$$\frac{\text{Weight force of the machine [N]}}{\text{number of levelling elements}} = \text{static load F [N] / per levelling element}$$

Once the static load F has been calculated, select a levelling element from the table. Please note that the static load F should be as close as possible to the static load capacity, but without exceeding it. The associated stiffness R of the selected leg is also shown in the table.

The actual compression is then calculated using the equation below.

$$\frac{\text{Static load F [N] / per levelling element}}{\text{stiffness R [N/mm]}} = \text{actual compression s [mm]}$$

Starting from the actual compression s calculated, the maximum degree of insulation as factor of the interference frequency can now be read in the above chart. To optimise the maximum degree of insulation, change the number of feet such that the static load F of each levelling element is as close as possible below a static load capacity value given in the table. This will increase the compression s which, in turn, improves the degree of insulation.

In general, medium and high frequencies can be very well insulated with an adequate compression.

Application example