

## Building vibration specifications

**NOTE**

Vibration of the site has the ability to affect the stability and homogeneity of the magnetic field. Therefore external vibrations or shocks affecting the magnet may degrade image quality. In the three spatial orientations the building must not exceed the following vibrational specifications.

## General information

**NOTE**

The mass of the floor plate should be about  $600 \text{ kg/m}^2$  (corresponding to a thickness of about min. 20cm or 8") to achieve good vibration and structure-borne sound isolation

**NOTE**

In case of using Sylomer + Sylodamp pads the deflection (bending) of the floor plate due to the weight of the magnet should be less than 0.6mm to avoid degradation of vibration and structure-borne sound isolation.

**NOTE**

The fringe field of the MR system may make its location critical as specified in the planning documentation. Additional room shielding can be calculated and recommended by the H SR CRM TPL PM planning department in Erlangen.

Refer also to: ([Magnetic Shielding / p. 133](#))

Vibration specification diagram

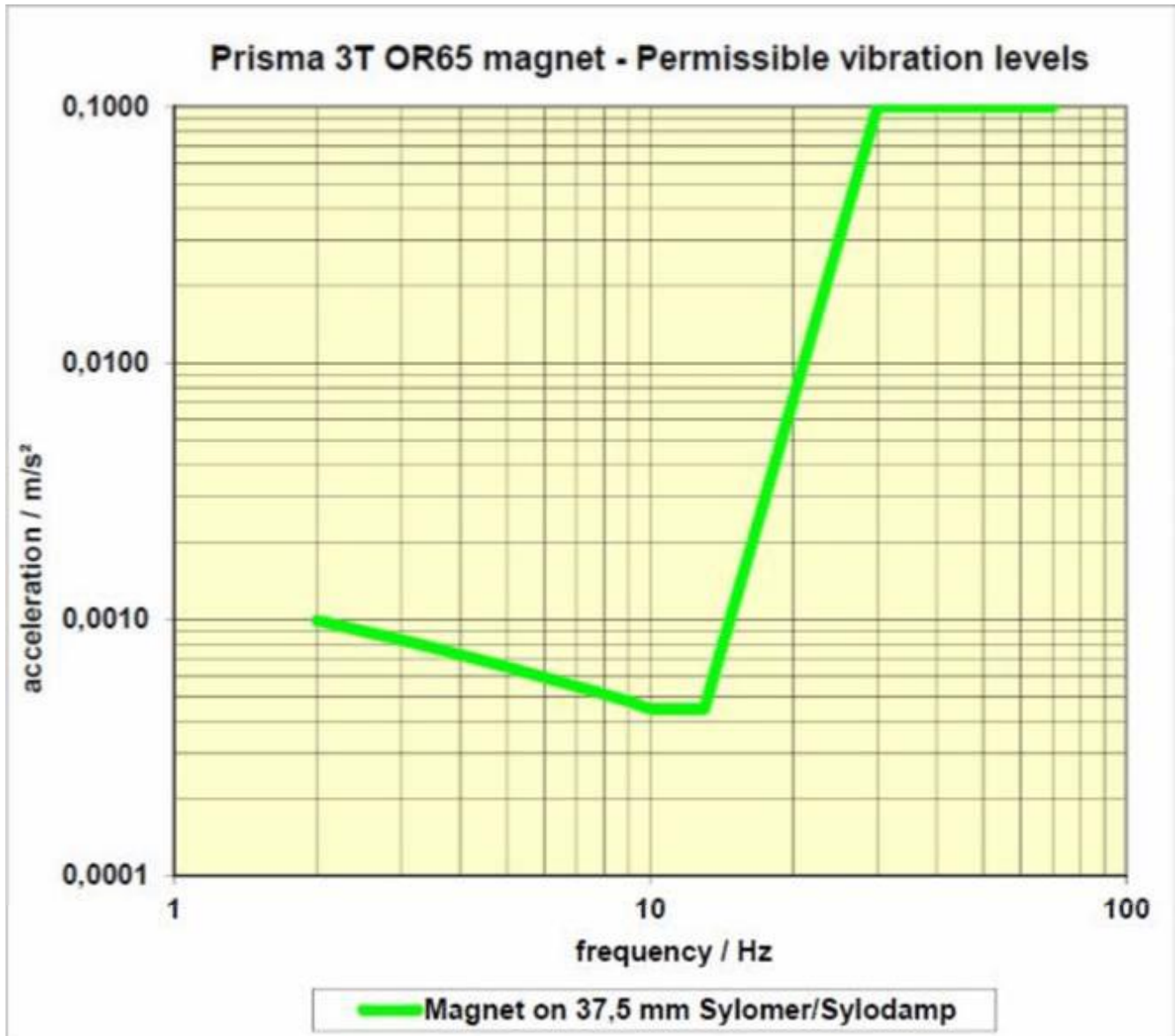


Fig. 144: Building vibration specification

frequency (Hz)	acceleration (m/s <sup>2</sup> rms)
	<b>Sylomer/Sylodamp</b>
1.5	0.00126
2.0	0.00099
3.0	0.00083
4.0	0.00073
5.0	0.00065
6.0	0.00059
7.0	0.00055

frequency (Hz)	acceleration (m/s <sup>2</sup> rms)
	Sylomer/Sylodamp
8.0	0.00051
9.0	0.00048
10.0	0.00045
11.0	0.00045
12.0	0.00045
13.0	0.00045
14.0	0.00072
15.0	0.00113
16.0	0.00171
17.0	0.00253
18.0	0.00367
19.0	0.00521
20.0	0.00726
21.0	0.00995
22.0	0.01344
24.0	0.02361
26.0	0.03962
28.0	0.06401
30.0	0.10000
32.0	0.10000
35.0	0.10000
40.0	0.10000
50.0	0.10000
60.0	0.10000
70.0	0.10000

Tab. 25 Building vibration specifications

The acceleration of	is	of the acceleration of gravity
0.001m/s <sup>2</sup>	1/10000 or -80 dB(g)	g=9.81m/s <sup>2</sup>

The requirement for acceleration  $a_{\max}$  is measured as maximum rms value per frequency component < 0.5Hz in the Fourier Transformation of the recorded signal (spectrum).

The vibration level of continuous vibrations (caused by air condition generator, compressor, etc.) at the location of the magnet must not exceed the specified values.

- ⇒ For all non-continuous transient vibrations the figures should be multiplied by 4 (or 12dB)
- ⇒ The acceleration of 0,001 m/s<sup>2</sup> is about 1/10000 (or about -80dB) of the acceleration of gravity (g=9.81m/s<sup>2</sup>).