

5.8 Vibration



Figure 5.8 Vibration testing

Effective values (root mean squares, rms) of vibration velocity are defined in the IEC 60034-14 standard (see Table 5.1). Requirements apply across the measuring range of 10 to 1000 Hz. The purpose of this standard is to measure the vibration behavior of a machine alone at no load, under defined conditions in a reproducible and comparable way, the motor placed on elastic mounting. However, though vibration severity depends on the balancing grade used, it also essentially depends on the properties of coupling to the driven machine and coupling parts used.

Possible origins of severe vibration of coupled motors can be incorrect balancing (half key/full key), inaccurate alignment of the motor with a coupled machine, and resonance of the system (motor and foundation). ABB motors fulfill grade A vibration level by default.

Vibration is expressed in mm/s RMS.

Vibration grade	Shaft height, mm mounting	56 ≤ H ≤ 132			132 < H ≤ 280			H > 280		
		Displac. μm	Vel. mm/s	Acc. m/s ²	Displac. μm	Vel. mm/s	Acc. m/s ²	Displac. μm	Vel. mm/s	Acc. m/s ²
A	Rigid mounting	25	1.6	2.5	35	2.2	3.5	45	2.8	4.4
	Free suspension	21	1.3	2.0	29	1.8	2.8	37	2.3	3.6
B	Free suspension	11	0.7	1.1	18	1.1	1.7	29	1.8	2.8
	Rigid mounting	-	-	-	14	0.9	1.4	24	1.5	2.4

Table 5.1 Limits of maximum vibration magnitude in displacement, velocity and acceleration (rms) for shaft height H