

MECHANICAL EQUIPMENT

Engineering

Mount Deflection Guide

Anti-vibration Mounts – Mount Deflection Guide

When all the factors and all the classes of mountings have been considered somebody has to make a decision - **how much deflection?** We will look at the following Mounting Deflection Guide.

ISOLATING MECHANICAL VIBRATION IN BUILDINGS

Somebody has to decide !

For every item of mechanical equipment in a building somebody has to decide whether anti-vibration mountings are needed at all and if so, what mounting deflection will be necessary to achieve an acceptable level of efficiency, taking into consideration the factors in [Table 1](#).

Table (1)

Factor	Remarks
1) Type of machine	Rotary or reciprocating, well balanced or not
2) Machine rpm	The slower the machine, the lower the disturbing frequency
3) Power transmitted	Comparing similar machines, increased power means more vibration energy
4) Floor stiffness	Equipment located on wide span flexible floors need more deflection than on narrow span or strongly constructed floors
5) Building flexibility	Modern high rise structures are flexible and need more mounting deflection than old fashioned rigid buildings
6) Building application	Acceptable level of vibration in hospitals and hotels is less than in factories
7) Location in building	Proximity to operating theatre or boardroom needs more isolation than close to kitchen or in basement.

The Mason Industries range of anti-vibration mountings is summarised in terms of deflection capability in [Table 2](#).

Table (2)

Maximum Deflection [mm]	Class of Mount	Type
5	Small rubber mount	NDA – B
10	Large rubber mount	NDC – D – E
25	Spring mount	SLF / SLM / SLR or C type
50 - 75 - 100	High deflection spring mount	SLH

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Use [Table 3](#) as a Mounting Deflection Guide. It is a modified and considerably simplified version of the information given in the ASHRAE Applications Handbook (American Society of Heating, Refrigerating and Air-conditioning Engineers). In our opinion there are too many factors and variables for any table of recommendations to be precise or all-embracing. Judgment still has to be used, to take account of all the factors listed in [Table 1](#).

For critical applications, particularly when consideration must be given to noise as well as vibration, as in the case of recording or music studios, professional advice should be sought.

To specify a deflection it makes sense to call for no more than about 75% of the maximum deflection of each class of mounting to ensure that one of the sizes in that class will comply. [Table 3](#), calling for 3, 6, 20, 40, 60, or 80 mm deflection, will therefore make it clear which types listed in [Table 2](#) can meet the specified deflection.

Use the [Mounting Deflection Guide](#) in conjunction with the [Recommended Mounting Specifications](#). The letters *A* to *E* in [Table 3](#) will tell you which specification to use.

Table (3) Deflection in mm

Type of Equipment	Ground or Basement Slab	Floor Span			
		6 m	9 m	12 m	
Centrifugal Pumps & Compressors at 1500 rpm	up to 5 kW	3 - A	20 - B or D	20 - B or D	40 - C
	5 to 50 kW *	6 - A	20 - B or D	40 - C	60 - C
Chillers & Boilers	6 - A	20 D or E	40 - C or E	60 - C or E	
Slow Speed 1 or 2 Cylinder Reciprocating Compressors **	500 to 750 rpm	20 - B or D	40 - C	60 - C	60 - C
	300 to 500 rpm	40 - C	60 - C	60 - C	80 - C
Centrifugal & Axial Fans	up to 10 kW – over 1000 rpm	6 - A	20 - B or D	20 - B or D	20 - B or D
	10 to 50 kW – over 500 rpm *	20 - B or D	20 - B or D	40 - C	60 - C
	350 to 500 rpm *	20 - B or D	40 - C	60 - C	80 - C
	under 350 rpm *	40 - C	60 - C	60 - C	80 - C
Cooling Towers	Same as for Fans except specification E preferred if equipment could be vulnerable to toppling movement due to wind load				

* over 50 kW – select deflection for next larger span

** inertia base probably required to limit movement