S2.14 Vibration Isolation Requirements

All vibration isolation equipment shall be selected in accordance with this Schedule.

Item	Equipment	Vibration Isolation Requirements
1	Centrifugal chillers	Restrained type steel springs in series with 3 layers of 8mm thick, 40 durometer neoprene waffle pads with 1mm thick shim, of 50mm minimum total static deflection. Steel base rails and outriggers shall be provided for spring mounting. Baseframe to be sized to support the first elbow on all connecting pipework. Floor supported elbows shall be isolated with similar type support of same static deflection for the chiller. There shall be no rigid ties to the structure, all connections shall be looped or flexible. Within the plantroom all chilled and condenser water pipes shall be supported form the floor and support beams only, with 25mm minimum static deflection steel springs in series with minimum 5mm deflection neoprene in shear supports.
2	Condenser water pumps Chilled water pumps	Unhoused type steel springs in series with 3 layers of 8mm thick, 40 durometer neoprene waffle pads with 1mm thick steel shim, of 50 mm minimum total static deflection. Inertia block/equipment mass ratio minimum 1.5:1 required. Thickness of the inertia block shall be 150mm minimum and need not exceed 300mm. The inertia blocks shall support he pipework up to and including the first elbows. For floor supported elbows, isolate with similar type support of similar static deflection as for pumps. There shall be no rigid ties to the structure, all connections shall be looped or flexible. Within the plantroom all chilled and condenser water pipes shall be supported form the floor and support beams only, with 25mm minimum static deflection steel springs in series with minimum 5mm deflection neoprene in shear supports. All chilled and condenser water pipes to be supported from the floor and support beams only.
3	Cooling towers	Restrained type steel springs in series with 2 layers of 8mm thick, 40 durometer neoprene waffle pads with 1mm thick shim, of 50mm minimum total static deflection. Springs may be located under drive assembly (motor-transmission-fan) or under tower base where a suitable baseframe shall be provided. All springs and hangers/supports and associated fittings mounted outdoors shall be supplied epoxy coated for corrosion control. There shall be no rigid ties to the structure, all connections shall be looped or flexible.

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Item	Equipment	Vibration Isolation Requirements
		All water pipes within 10m of any tower connections shall be supported from the floor only with 32mm minimum static deflection steel springs in series with minimum 5mm static deflection neoprene in shear hangers or supports.
4	Air handling units and primary air units	Unhoused type steel springs in series with 2 layers of 8mm thick, 40 durometer neoprene waffle pads and 1mm thick steel shim of the following minimum total static deflection: Above 1000 rpm – 38 mm 600 – 1000 rpm – 50 mm There shall be no rigid ties to the structure, all connections shall be looped or flexible. All duct connections shall be truly aligned and executed using flexible material e.g. lead impregnated PVC of minimum STC 20. Use equivalent deflection spring in series with neoprene in shear hangers for ceiling suspended units.
5	Axial and centrifugal fans above 1KW	Unhoused type steel springs in series with 2 layers of 8mm thick, 40 durometer neoprene waffle pads and 1mm thick steel shim, or springs in series with neoprene in shear hangers of the following minimum total static deflection: Above 1000 rpm – 25 mm 600 – 1000 rpm – 38 mm There shall be no rigid ties to the structure, all connections shall be looped or flexible. All duct connections shall be truly aligned and executed using flexible material e.g. lead impregnated PVC of minimum STC 20.
6	Axial and centrifugal fans 1kW and below	Double deflection neoprene in shear hangers or supports of minimum 6mm total static deflection. There shall be no rigid ties to the structure, all connections shall be looped or flexible. All duct connections shall be truly aligned and executed using flexible material e.g. lead impregnated PVC of minimum STC 20.
7	Fan coil units in under 0.75kW motor size (FCUs over 0.75kW shall be isolated as for AHUs)	2 layers of 8mm thick, 40 durometer neoprene pads in between mounting or suspension brackets or similar neoprene grommets. There shall be no rigid ties to the structure, all connections shall be looped or flexible.
8	Outdoor condensing units with compressor under 5 kW	Double deflection neoprene in shear hangers or supports of minimum 6mm total static deflection. All isolator metal springs and fittings located outdoors are to be galvanised or epoxy coated.

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Item	Equipment	Vibration Isolation Requirements
9	All horizontal pipework beyond 1st three spring hangers and within up to 100 diameter length from the pumps or equipment	Double deflection neoprene in shear hangers or supports of minimum 6mm total static deflection. All isolator metal springs and fittings located outdoors are to be galvanised or epoxy coated
10	All vertical riser and dropper pipework	Resilient pipe guides or mounts with neoprene in shear mounts in angle or channel steel frames of minimum 5mm static deflection
11	All pipework unless otherwise specified	One layer 8mm thick neoprene waffle pad sleeve between pipe and clamp or supports
12	Penetrations of all pipework and ducts	One layer 25mm thick 120 kg/cu.m. fibreglass in 0.8mm sheet steel sleeve with nom. 25mm clearance and caulked from both sides with a non-setting resilient caulking compound e.g. Bostik Fireban or equivalent.

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