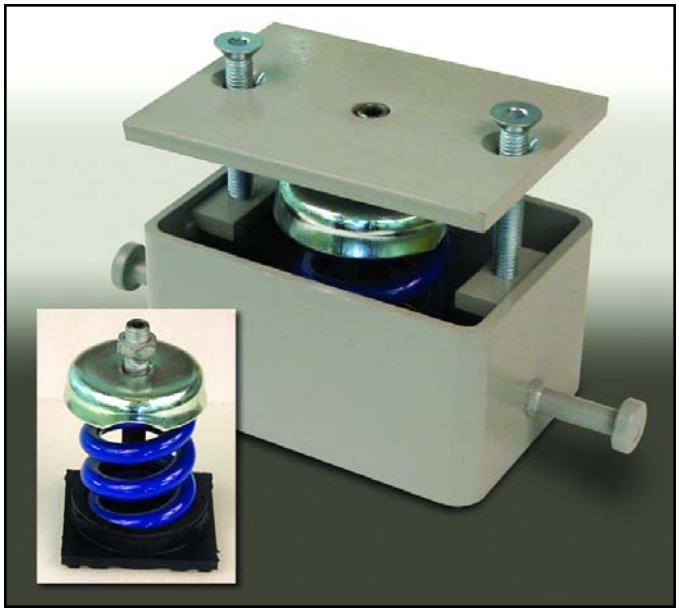
KINETICS Noise Control

Spring Lift Slab Floor Isolation System

Model LSM



Floor Isolation Theory:

An isolated floor, commonly called a “floating floor”, is used to minimize impact and airborne sound transmissions through the floor/ceiling structure. Floating floor composite construction consists of a built-up floor (e.g., concrete slab, wood, wood/gypsum board composite) supported by an array of resilient mounts placed on top of the structural, non-isolated floor. Floating floor systems must be decoupled at all edges from walls and other non-isolated building components. Creating airspace and resiliently decoupling the mass of the isolated floor from the non-isolated structure will disrupt noise transmission into the floor/ceiling structure. The addition of a resiliently decoupled ceiling to the underside of the structural floor optimizes the effectiveness of the floor/ceiling composite in combating noise. Two methods exist for creating an isolated floor: 1.) formwork, and 2.) lift slab, a.k.a. “jack-up floor”. Kinetics Noise Control floor isolation products use various types of resilient decoupling isolators including springs, fiberglass or rubber pads, and combinations of pads and springs to improve Sound Transmission Class (STC) and Impact Insulation Class (IIC) values.

Benefits:

- Fabricated, non-cast isolator housings permit flexible product and system design that maximizes application opportunities for any slab thickness, air cavity, and/or load options.
- Spring isolator natural frequencies (fn) of 3.13 Hz for 1” rated deflection springs and 2.21 Hz for 2” rated deflection springs. Other rated deflection springs available.
- In-field acoustical testing yielded results of FIIC 72, FSTC 61 for a vented (non-vented floors can yield higher FSTC values) floating floor.
- Spring/neoprene cup combination improves performance against low-frequency noise.
- Proven effective for vibration isolation applications ranging from floors for sensitive lab measuring equipment (e.g., metrology and surgical labs) to sports floors over retail/commercial spaces.
- Factory installation and/or supervision available.

Application:

Lift slab floating floor systems that incorporate spring isolator assemblies to decouple concrete slabs from non-isolated structural floors are used where vibration and impact are critical and of greater concern than airborne noise transmission. In instances when vibration and/or impact noise control are severe, the air space beneath the spring-isolated floor is vented. This enables the composite construction to yield the lowest natural frequency (fn) possible thereby enhancing performance against lower disturbing frequencies.

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Application

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If additional control of airborne noise is needed for a vented floating floor, the floor/ceiling composite will require partitions on the floating floor at the perimeter and/or an isolated ceiling.

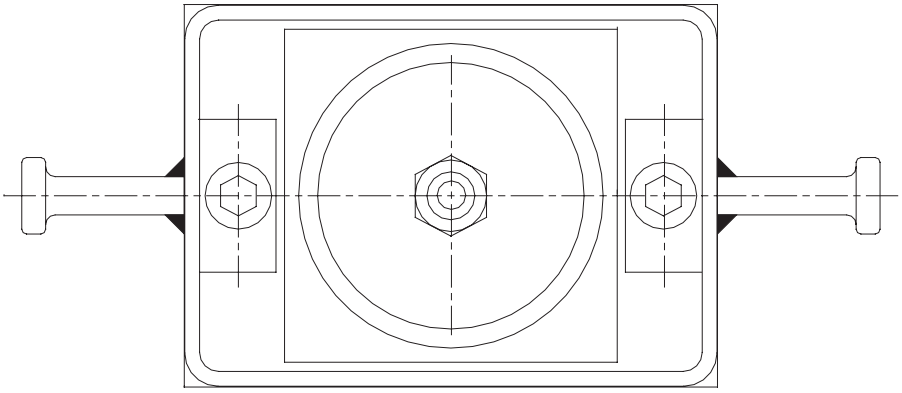
Representative examples of projects that can justify the use of spring lift slab isolators are bowling alleys, weight rooms, gymnasiums, aerobic activities, and dance studios. Spring isolators also are incorporated into lift slab floors supporting sensitive measuring equipment in order to mitigate vibrations that could compromise performance. While the bulk of isolated slabs can be supported using fiberglass or neoprene pads, most often in formwork systems, spring-isolated lift slabs are needed for the most critical vibration and impact noise isolation requirements.

Typically, the Model LSM system supports a four-inch (4") thick standard weight (150 PCF) concrete slab using spring isolator mounts spaced up to 54" on center. First, Perimeter Isolation Board (Model PIB) is adhered to the perimeter of the floating floor area. Then, one (1) layer of 6-mil thick poly sheeting is rolled-out across the structural slab and up Model PIB, serving as a bond breaker between the non-isolated concrete structure and the concrete floor being floated. Next, isolator mounts are located and placed on top of the poly sheeting according to approved submittal drawings. Isolator mount spacing and capacity can vary depending on load requirements across the floating floor. Extra mounts may be required to carry additional loads imposed by, for example, walls and heavy equipment placed on the slab after it is lifted. Once the isolator housings are in place, steel concrete reinforcement bars are used to interconnect the mounts. Additional reinforcement as dictated by conventional concrete slab design requirements may be required before concrete is poured level to the tops of the mounts. Up to 30 days may be required for the concrete to cure to strength. Once the concrete has cured properly, spring assemblies are inserted into the housings and the slab is lifted to the specified height. When the slab is lifted to specified height, the composite construction typically includes a 1" or 2" air cavity. Complete installation guidelines and isolator array plans and details are included in the project submittal package.

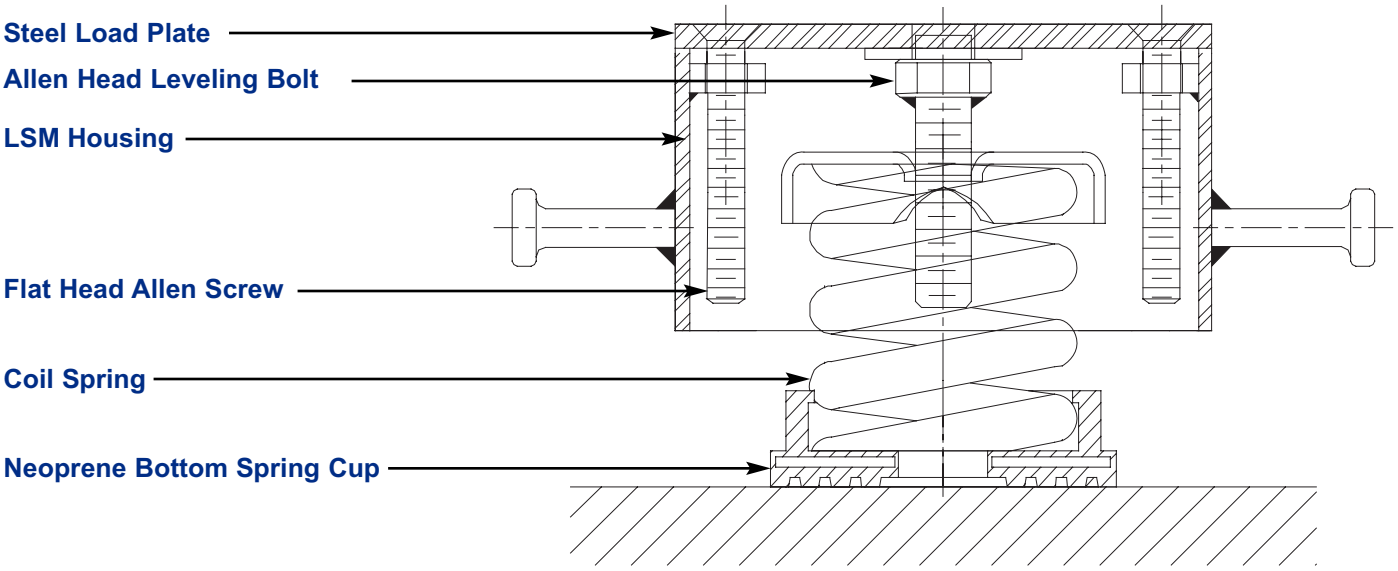
Typical Construction

4" Concrete Slab,
2" Airspace,
1" or 2" Deflection

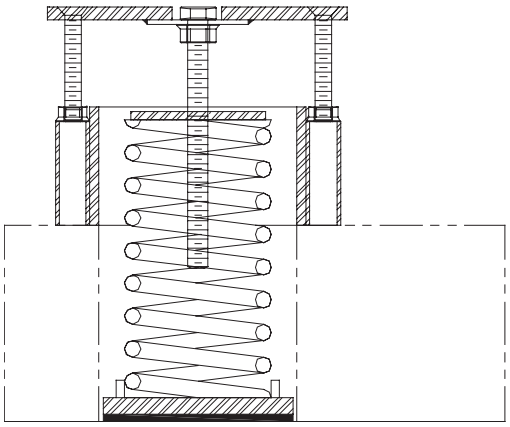
Plan View



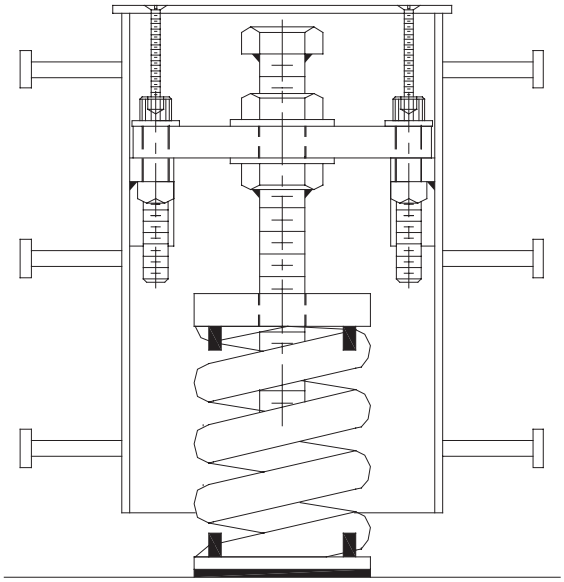
Elevation View



Customized Construction Examples

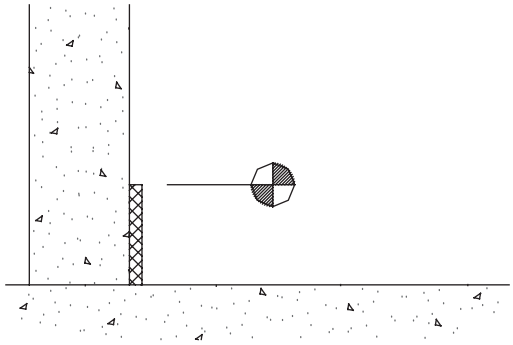


3" Deflection Rooftop Application

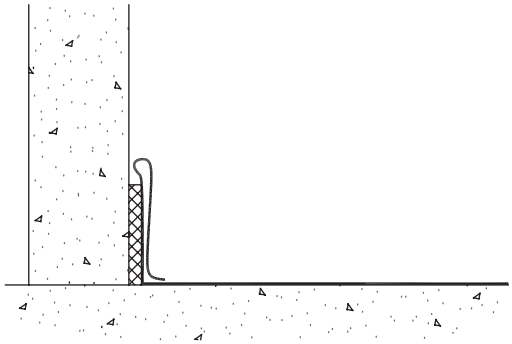


15¾" Concrete Slab, 2" Airspace, 1" Deflection

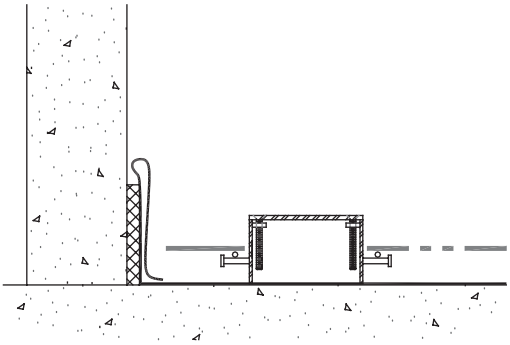
Installation Sequence



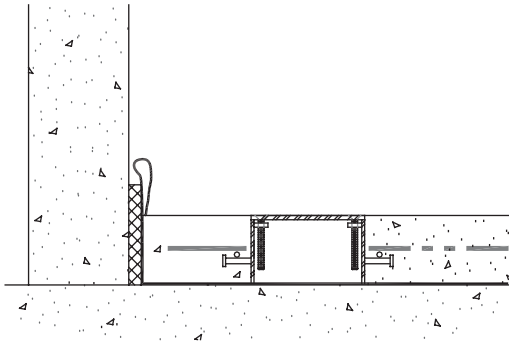
1) Adhere PIB to wall.



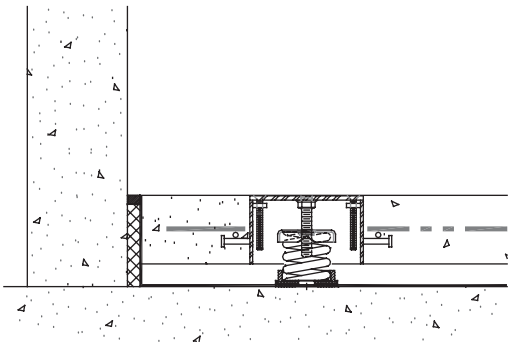
2) Cover floor with poly film.



3) Place Isolators per floor submittal drawing. Concrete reinforcement to be placed as per project drawings and design specifications



4) Pour floating concrete slab.



5) Install spring assemblies and steel top plate, and jack up slab to specified height.

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Download Model LSM information including three-part specification, installation guidelines, and typical installation drawings at **www.kineticsnoise.com/arch/lsm**. *Call the factory at 800-959-1229 if needing additional information; ask for Architectural Sales. Purchase Model LSM and accessories through your local sales representative (***www.kineticsnoise.com/replocation.asp***).*