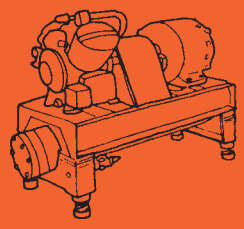
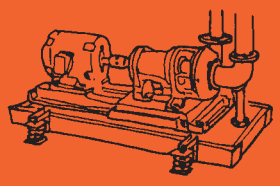
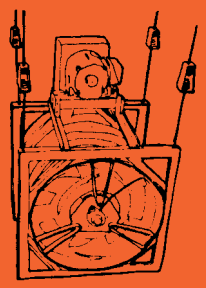
MASON INDUSTRIES

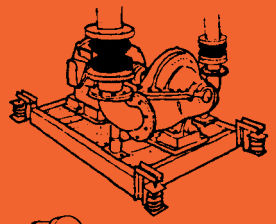
MANUFACTURERS OF NOISE & VIBRATION CONTROL PRODUCTS

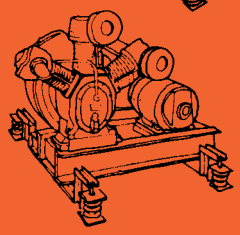


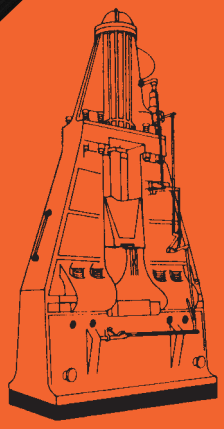


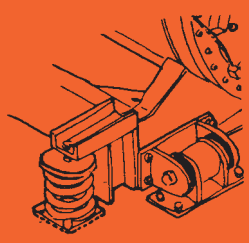
Mason Industries has been a leader in the field of noise, vibration and seismic control for over 50 years. Our products are specified by consultants and architects here and throughout the world. In addition to a complete range of mountings, hangers, and flexible connectors for mechanical equipment, we provide computer studies for snubbing systems in earthquake and bomb blast zones. Floating floors, walls and suspended ceilings provide total acoustical room isolation. Rubber bearing pads and spring mountings are used to support entire buildings and railroads. Our professional engineering staff is here to serve you in every way.







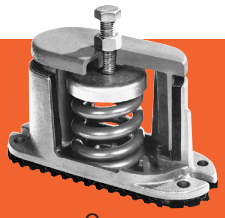




In addition to the services mentioned above, our industrial application department can help you with recommendations for isolation of all types of equipment. Let us handle your inquires regarding isolation of forging presses, drop hammers, punch presses, grinders, compressors, generators, etc.

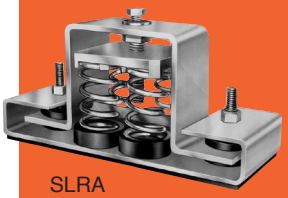
SPRING MOUNTS

Helical spring mounts have been around for many years, but our company pioneered the use of springs designed with diameters equal to or approaching their operating height. The SLF configuration is used without housings for maximum vibration attenuation. While our telescoping Type C casting does introduce some damping, all of the other housings encase the spring without interfering with its action. The Type KIP and KIJ can be cast into foundations poured in place. The springs are adjusted to elevate the foundations. Types SLR or SLRJ are restrained spring mountings with operating heights equal to installed height and interlocks for safety in wind loads. Vertical limit stops prevent spring extension when weight is removed. Mountings carrying 15,000 pounds or more are usually designed with hydraulic adjustment to save time and effort. Another Mason Industries contribution to the art.

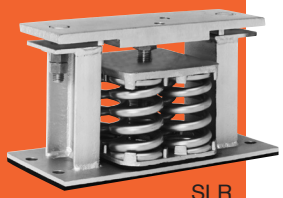

C


SLF


KIP


SLRA


SLF-100

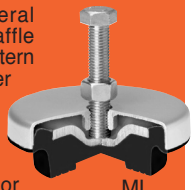

SLR

NEOPRENE MOUNTS

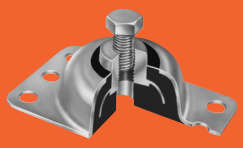
When we designed our ND mountings back in 1958, they were the first to have all metal parts covered by neoprene to prevent corrosion and to provide a nonskid surface. The ND was made taller to gain added deflection, rather than using the old technique of bolting two mountings in series. Individual neoprene mountings are available in load ranges from 15 to 4300 pounds per mounting. The BR, RBA, RCA & RDA mountings are captive designs suitable for mobile installations and applications in seismic zones. ML Mountings are used for machinery leveling.


ND

Our Type W pad pioneered waffle designs, and has several advantages over the more common ribbed variety. The waffle design is self-sealing so the pads last longer. The matching pattern on both sides provides for higher capacities in a given rubber hardness. Type W pads are available in cut sizes up to 18" x 36". The photo shows the 3/4" thick Super "W" modular design, our latest advance. Standard mounts and pads or custom products can be molded in our own plant in special materials such as nitrile or bridge-bearing AASHO quality neoprene or natural rubber.


ML

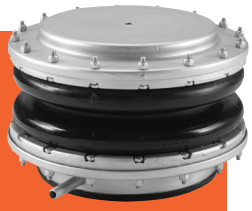

SUPER W

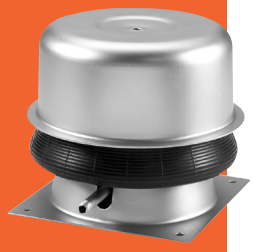

RBA, RCA & RDA


BR

AIR SPRINGS

Air springs provide low frequency isolation with no metallic continuity. Both our twin sphere MT and rolling lobe MAS are specifically designed for low frequencies without noise transmission. Mountings are installed with leveling valves and a replenishing air supply. Our air springs can be used for direct mounting or with steel base designs and are available in a range of sizes or built to special order in our Mercer division.


MT

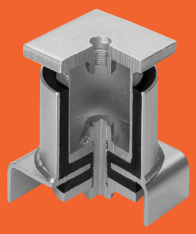

MAS

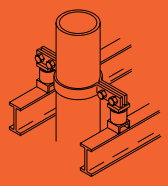

Leveling Valve

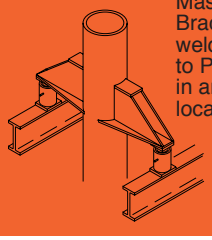
PIPING SPECIALTIES

Resilient guiding and anchoring of piping has always been something of a problem. Many designs place the resilient material in direct contact with the piping surface. Since the materials are normally rubber or rubberlike, there have always been the problems of heat sensitivity, friction and wear as the piping slides against the resilient surface. In some cases, there was also an unpleasant odor, as these materials tend to smell when heated.

The ADA pipe anchor and VSG guide may be bolted or welded in any position. They are away from the piping and used under the ends of a rugged clamp or bracket, depending on whether anchoring or guiding is required. ADA anchors and guides are manufactured for all sizes of pipe and may be used as seismic restraints as well.


ADA

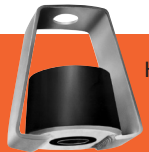

Pipe Clamp welded to Pipe in guide locations


Mason Bracket welded to Pipe in anchor locations


VSG

HANGERS

Primitive forms of neoprene hangers (HD), spring hangers (HS) and combination spring and neoprene hangers (DNHS) were around before 1958, but we improved them all as we established our standards. Our most sophisticated design is the 30N, which uses a spring series even larger in diameter than those used for the SLF mountings. This enables us to enlarge the hole in the bottom of the hanger box so the suspension rods can swing through a full 30 degree arc, virtually eliminating the age-old problem of hanger rods rubbing against the holes in the hanger boxes and short-circuiting the system. We use neoprene bottom cups for the springs, molded with rubber hole bushings as an added precaution. All spring hangers can be furnished precompressed with a loading scale for simplified adjustment and load verification in the field, as well as acoustical ceiling installation. Special hangers are manufactured for pipe expansion problems.


HD


HS


DNHS


30

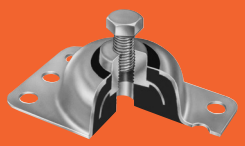

30N

SEISMIC MOUNTS

Simple specifications for mountings used in seismic zones call for static g ratings in three planes. Welded and ductile spring designs such as the SSLR and SSLFH meet these requirements, as do the BR, RBA, RCA and RDA. The type M is a special design for bomb blast protection. Submittals include either static calculations or independent laboratory test data.

SSLFH

BR

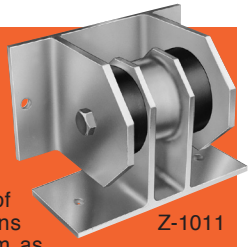


RBA, RCA & RDA

M

SEISMIC SNUBBERS

The best approach to the seismic problem utilizes our Z-1011 snubbers designed with the proper response to a specific earthquake curve. The Z-1011 series have been tested and rated for stiffness and ultimate capacity. Air gaps between the AASHO bridge-bearing neoprene bushings and the steel housings prevent short circuiting of the isolation provided by the springs. Applications are normally backed up by our computer program as developed by the University of California in Pasadena. The dynamic program accepts the earthquake or bomb blast input and predicts motions and accelerations at the bearings, mechanical service connections and structural attachments. This enables us to maintain specified motion and deceleration levels. The Z-1225 is a simpler design primarily used when only static analysis is required.

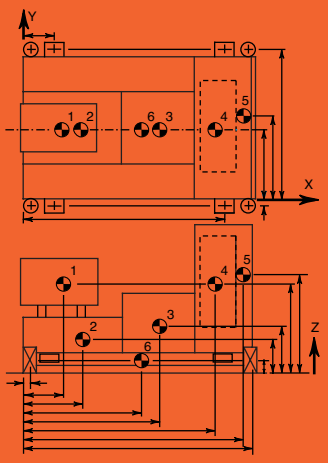


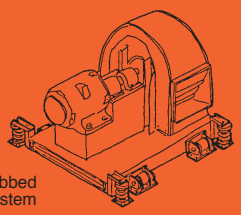
Z-1011

Z-1225

COMPUTER CAPABILITY

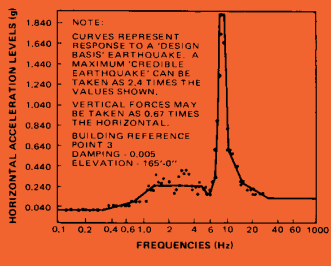
Our computer program analyzes spring and snubber systems under any given machine and responds with the natural frequency in all six modes. Movements and accelerations can be computed at 26 discreet locations simultaneously, in response to a particular earthquake or bomb blast curve. Mounting and snubber locations and frequencies are changed as needed until the program reports accelerations within the fragility levels.





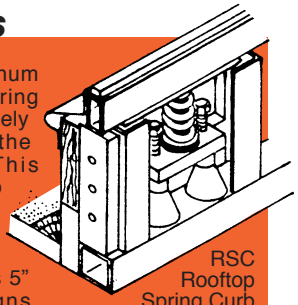
Snubbed Fan System

Acceleration Response Spectrum



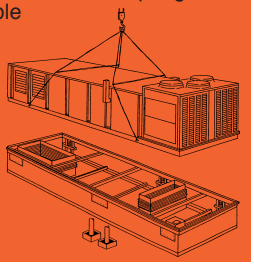
ROOF CURBS

The CMAB aluminum standard curb spring cap has been largely superceded by the RSC design. This complete rooftop spring curb is supplied in standard deflections up to 3" and as much as 5" in special designs. Springs are adjustable and removable.



RSC Rooftop Spring Curb

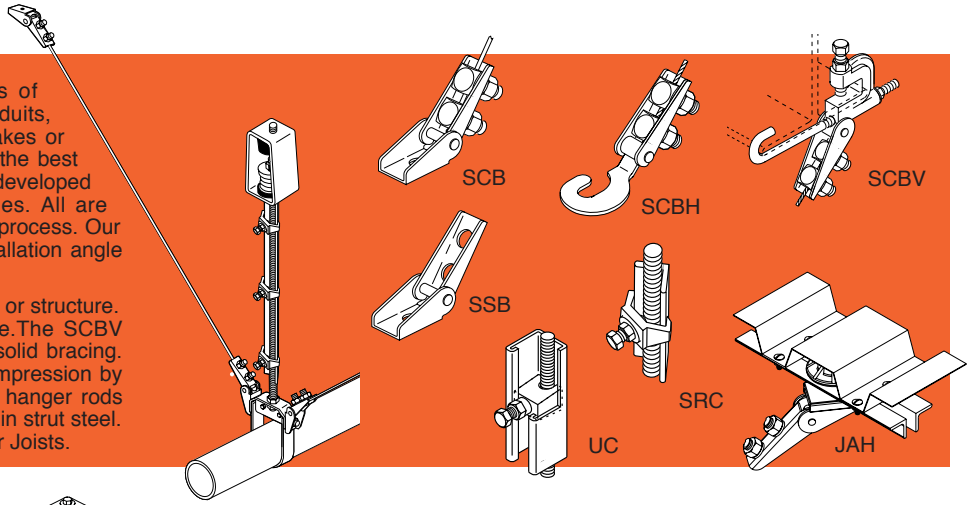
While most RSC curbs are standard heights for flat roofs, we customize to any height and compensate for roof pitch as well.



FLEXIBLE CABLE BRACES

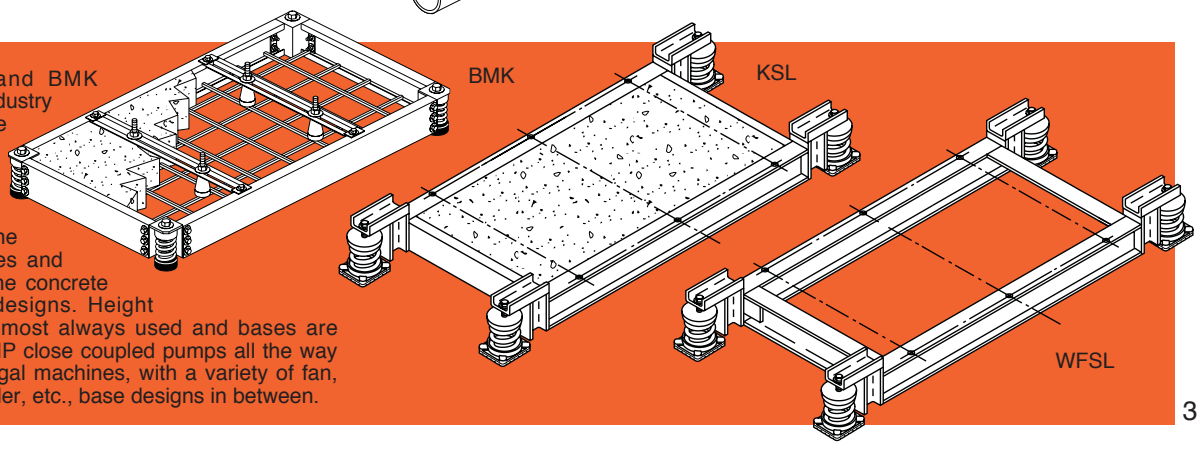
Cable braces are the most efficient means of keeping suspended equipment, electrical conduits, piping and duct work in place during earthquakes or bomb blast. There are many requirements for the best and quickest means of connection so we have developed a wide range of products in various capacities. All are California OSHPD approved or in the approval process. Our cable products are hinged to adjust to the installation angle and avoid cable fraying.

The SCB has a hole for anchoring to equipment or structure. The SCBH attaches with a hook to save time.The SCBV clamps to steel beams. The SSB attaches to solid bracing. The SRC prevents hanger rods buckling in compression by attaching the rods to angles.The UC prevents hanger rods buckling in compression by bolting the rods within strut steel. The JAH provides a means of attachment to Bar Joists.



BASES

Type WFSL, KSL, and BMK bases have become industry standards because we have encouraged specifications calling for structural steel perimeters with a depth equal to 1/10th the length for WFSL frames and 1/12th the length for the concrete filled BMK and KSL designs. Height saving brackets are almost always used and bases are customized to fit 11/2 HP close coupled pumps all the way up to 8000 ton centrifugal machines, with a variety of fan, pump, compressor, chiller, etc., base designs in between.

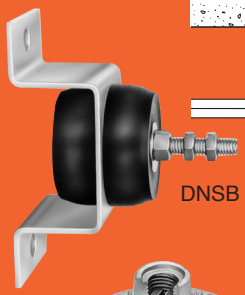


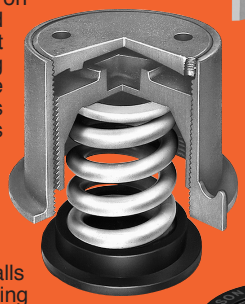
FLOATING FLOORS, WALLS & CEILINGS

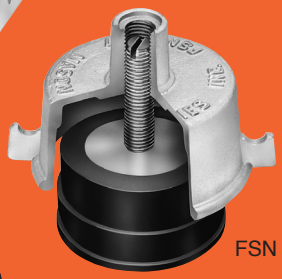
The idea of pouring a secondary floor on an elastic medium goes back as long as we can remember. Cork was the first material, but because of its high frequency early floating floors were not too effective. The method of pouring concrete on plywood supported by fiberglass was improved upon by substituting EAFM-AASHO bridge-bearing neoprene mounts for the glass. Panels are not the best approach, however, and we recommend the jack-up system. You pour the secondary floor around FS-1702 or FSN mounts on plastic sheeting spread over the sub floor. The cured slab is lifted by turning the adjustment bolts in each mount. No plywood is left beneath the floors; there is no possibility of concrete breaking through the form work to short circuit the system and larger more effective air gaps can be used at no increase in cost. Mountings are usually placed on 54" centers with closer spacing in areas carrying heavier loads. The FS spring design is used for those applications where impact rather than sound is the major problem. These jack-up systems were both developed and proven by our company and we have acoustical and structural test data to back up our recommendations.

Floating walls and suspended ceilings complete the isolation. Walls should be resting on a continuous SWW pad, if not on the floating floor and sealed at the top with AB-716 angle brackets. Buckling is prevented by means of DNSB sway braces or the simpler WIC or WCL commonly used with fabricated walls. All of these devices use neoprene as the isolation media or natural rubber if specifically called for by an acoustical consultant.

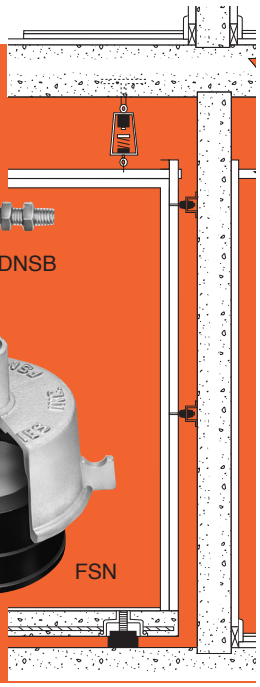

WIC


DNSB


FS


FSN


EAFM

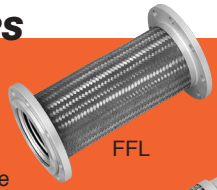


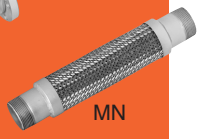
FLEXIBLE CONNECTORS

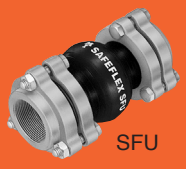
Our new stainless steel offering is engineered to provide superior quality and performance on all products.

More interesting designs are the threaded SFU thru 2", the double sphered flanged SFDEJ thru 12", as well as the single sphere SFEJ thru 24" diameter. These connectors are not wire reinforced; they are constructed of multiple plies of Kevlar tire cord and EPDM in a manufacturing process very similar to the manufacture of truck tires. This construction enables these connectors to breathe volumetrically and to be rated for maximum elongation so control rods are not necessary. We have been involved in intensive testing of these connectors through acoustical firms such as Cerami & Assoc., to verify that they are extremely effective in reducing both noise and vibration at pump impeller frequency (rpm times number of blades).

We believe that we are the only firm that has developed this sort of acoustical data. The change to Kevlar, EPDM and captive flanges has virtually eliminated all failures.


FFL


MN


SFU


Safeflex SFDCR


Safeflex SFEJ


Safeflex SFDEJ

BUILDING ISOLATION

Vibration isolation technology has moved on to the isolation of entire buildings rather than just building components. We have designed and manufactured Neoprene and Natural Rubber bearing pads to frequencies as low as 6 Hz and steel spring assemblies in the 0.75 to 2.00 inch (19 to 50mm) deflection range in individual capacities of 1,000,000 lbs. (454,000 kgs.) Both techniques are used to keep ground vibration and noise out of buildings close to railroads, subways, heavy traffic or industrial impact.

Rubber bearings conform to Government codes and testing. Life expectancy is 50 or more years. While they are generally not replaceable, replacement can be built into the installation at a small added cost if the locations remain accessible.

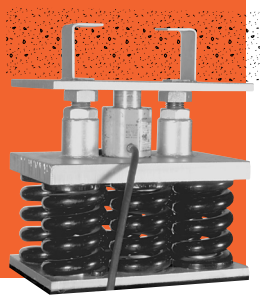
Spring mountings are often partially pre-compressed and automatically released as building weight is added during construction. We prefer the technique of structural spring support with removable spacers after the mountings have been hydraulically compressed to assume the building weight.

Our professional engineering staff is licensed in 30 states and ready to help you.


Rubber Bearings

SPRING MOUNTINGS


Precompressed


Hydraulically Adjusted

Send for Our Complete Print Catalog and CD-ROM with Catalog, Engineering Specifications and Seismic Restraint Guidelines

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