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BASES FOR

**PUMPS–
BLOWERS–
COMPRESSORS–
HVAC UNITS – ETC.**

BOLTED MODULAR BMK/KSL BASES

BULLETIN B-840-4

Many years ago, we reduced the cost of concrete bases by introducing KIP mountings. These mountings are nailed to the inside of the contractor's wooden forms to provide side openings for the springs that elevate the base and isolate the equipment. KIP bases are structurally successful as the rigidity and strength of any base is dependent on the depth and the reinforcing, and not on the perimeter steel.

Perimeter steel acts as a form for the concrete and it provides a convenient means of attaching height-saving brackets and packaging the reinforcing. While the KIP designs appear to be less expensive, contractors prefer buying the complete package within the steel form work as fewer trades are involved.

Traditionally, all vibration base manufacturers used rolled beams or channels for these forms. The obvious reason was availability as these materials could be bought in small quantities. Because of your confidence in our company, our volume has increased to the point where it is possible for us to stock modular lightweight sections to more efficiently provide forms without using structural members. The BMK design is available in 6" and 10" depths and in 6" length increments in the smaller sizes and 12" thereafter. Since a 10" modular base is more rigid and less costly than an 8" structural base, we normally offer our 10" BMK even though an 8" depth might meet a minimum specification. We must apologize for our use of the letter "K" as the abbreviation for concrete. In our early history, the letter "C" was used for "Castings". The code name BMK stands for "Bolted Modular Koncrete".

Since the members are formed rather that rolled, our engineers were able to call for greater thickness of material and flange width as the sections became deeper and longer. All sections are sufficiently rigid to hold the wet concrete without cross bracing. Any rectangular or square base within the size limits of the formed sections can be assembled from stock by bolting these members to suitable corner brackets.

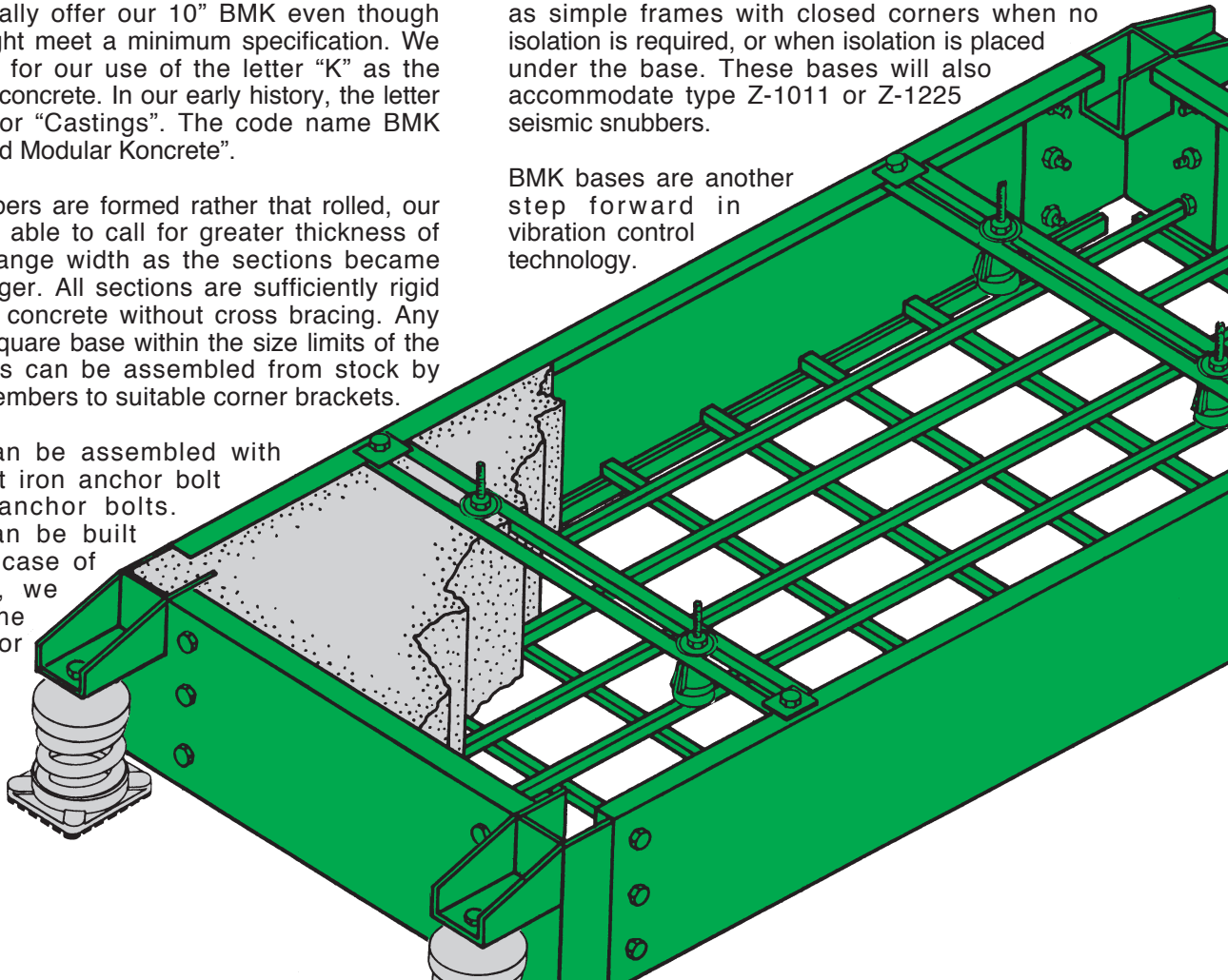
BMK bases can be assembled with templates, cast iron anchor bolt sleeves and anchor bolts. Reinforcing can be built in, and in the case of blower bases, we can provide the adjustable motor slide rails.

Thus, we have kept our original concept of the complete package and we have reduced weight by eliminating the needlessly heavy structural members that do nothing for base integrity. All designs have been destruction tested using full scale models in the most unfavorable long and narrow configurations. Safety factors are a minimum of three to one. We continue to recommend a depth of 1/12 the longest dimension of the base, with a minimum of 6".

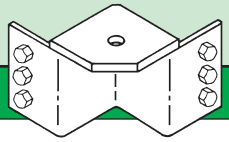
The advantage to the specifying engineer and the owner is the much improved appearance of the smoothly formed contours and the baked enamel finish. There are very few exposed welds. The contractors find these bases easier to handle and when the overall dimensions are too large to fit through building openings, they can be shipped knocked down and quickly assembled. The modular submittal drawings are excellent and delivery time is greatly reduced by shipments from depots throughout the country and the world.

BMK bases are most commonly used with SLF spring mountings from the minimum 3/4", 1 1/2", 2 1/2" and 3 1/2" groupings. They are equally adaptable to type C, SSLFH and SLR spring mountings or Air Springs and ND Neoprene mountings. They can be furnished as simple frames with closed corners when no isolation is required, or when isolation is placed under the base. These bases will also accommodate type Z-1011 or Z-1225 seismic snubbers.

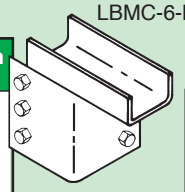
BMK bases are another step forward in vibration control technology.



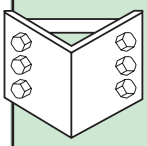
MODULAR CORNERS



BMC-6-A



LBMC-6-B,C,D

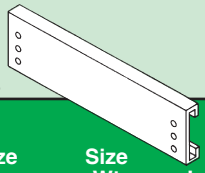


BMC-6-E

Size	Used With	Ship Wt. Each (lbs)	(kgs)
BMC-6-A	SLF -B,-B2,-C,-C2 SLF(H) 101-109, 126-131	7.5	3.4
LBMC-6-B RBMC-6-B	SSLFH -B,-B2,-C,-C2 SLF(H) -B,-B2,-C,-C2 SLF(H) 132-135, 150-157	8.0	3.6
LBMC-6-C RBMC-6-C	SLF(H) -2,-2-C2,-3,-3-C2	10.0	4.5
LBMC-6-D RBMC-6-D	SLF(H) 110-113, 136, 158-159	21.0	9.5
BMC-6-E	No Isolation, Isolation Under Base or T Shaped Base Corners	4.5	2.1

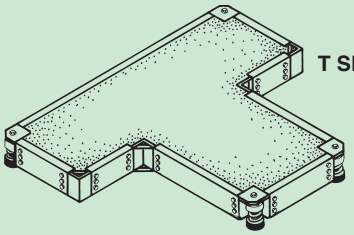
Furnished with all bolting hardware as required.

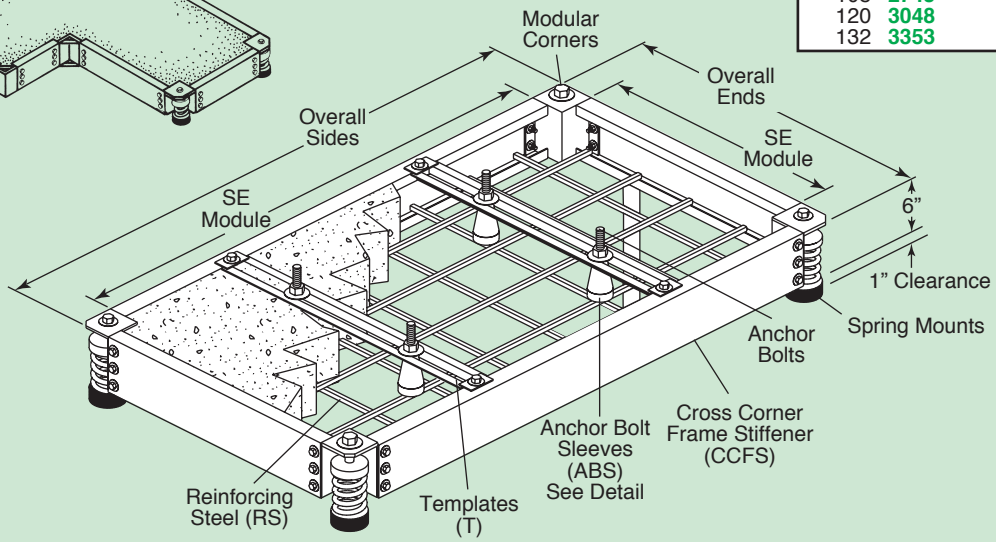
MODULAR SIDES & ENDS

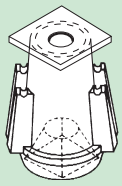


Overall Base Dimensions Either Sides or Ends Length (in)	(mm)	Size	Size Wt (lbs)	(kgs)	Length (in)	(mm)
18	457	SE6-10	2	1.0	10	254
24	610	SE6-16	3	1.5	16	406
30	762	SE6-22	4	2.0	22	559
36	914	SE6-28	6	2.8	28	711
42	1067	SE6-34	7	3.3	34	864
48	1219	SE6-40	8	3.8	40	1016
54	1372	SE6-46	13	6.0	46	1168
60	1524	SE6-52	15	6.9	52	1321
66	1676	SE6-58	17	7.8	58	1473
72	1829	SE6-64	18	8.3	64	1626
84	2134	SE6-76	23	10.4	76	1930
96	2438	SE6-88	26	11.8	88	2235
108	2743	SE6-100	29	13.4	100	2540
120	3048	SE6-112	33	15.1	112	2845
132	3353	SE6-124	36	16.3	124	3150

T SHAPED BASE

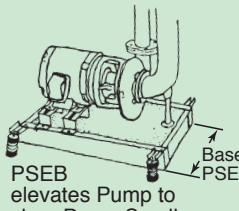






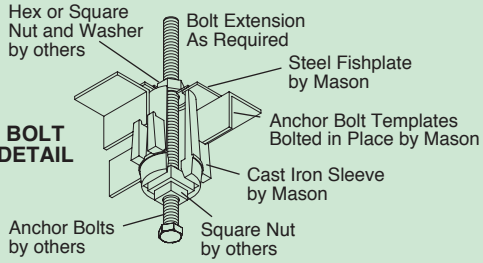
ANCHOR BOLT SLEEVE WITH 2"x 2" 51 x 51mm FISHPLATE

Size	Ship Wt (lbs)	(kgs)
ABS	1.25	0.57



PSEB elevates Pump to clear Pump Scroll

ANCHOR BOLT SLEEVE DETAIL

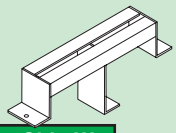


CROSS CORNER FRAME STIFFENER

Size	Length (in)	(mm)	Ship Wt (lbs)	(kgs)
CCFS-36	36	914	3.5	1.6

One used per base over 4' 1219mm in width to square base and stiffen during shipment if reinforcement is not welded in place.

PUMP SCROLL ELEVATION BRIDGE



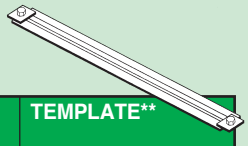
Size	Length (in)	(mm)	Ship Wt (lbs)	(mm)
PSEB-18	18	457	8.0	3.4
PSEB-24	24	610	9.5	4.2

SQUARE HEAD ANCHOR BOLT & NUTS

Size & Length (in)	(mm)	Ship Wt (lbs)	(kgs)
3/8 x 4 1/2	10 x 114	0.2	0.10
1/2 x 4 1/2	13 x 114	0.3	0.14
5/8 x 4 1/2	16 x 114	0.5	0.23
3/4 x 4 1/2	19 x 114	0.8	0.37

4 1/2" 114mm long Anchor Bolts will extend 1 1/2" 38mm above poured concrete. Anchor Bolts are furnished with a steel washer and nut.

REINFORCING STEEL & MODULAR ANCHOR BOLT TEMPLATES

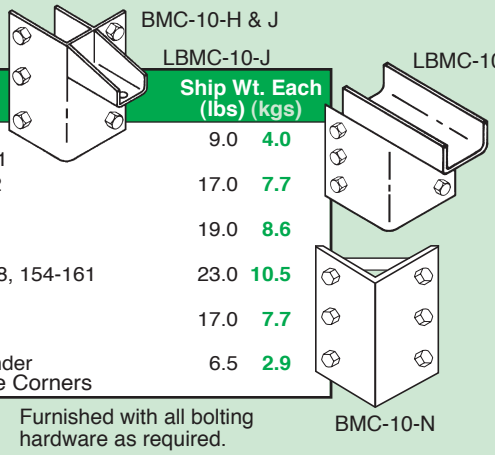


Base Dimensions (in)	(mm)	Bar or Template Length (in)	(mm)	REINFORCING STEEL* 3/8" 10 mm Square Size	Ship Wt (lbs)	(kg)	1/2" 13 mm Square Size	Ship Wt (lbs)	(kg)	TEMPLATE** Size	Ship Wt (lbs)	(kg)
18	457	17 1/2	445	RS4-18	0.8	0.4	RS5-18	1.3	0.6	T-18	2.6	1.2
24	610	23 1/2	597	RS4-24	1.0	0.5	RS5-24	1.7	0.8	T-24	3.4	1.6
30	762	29 1/2	749	RS4-30	1.2	0.6	RS5-30	2.2	1.0	T-30	4.2	2.0
36	914	35 1/2	902	RS4-36	1.5	0.7	RS5-36	2.6	1.2	T-36	5.1	2.4
42	1067	41 1/2	1054	RS4-42	1.7	0.8	RS5-42	3.0	1.4	T-42	5.9	2.7
48	1219	47 1/2	1207	RS4-48	2.0	0.9	RS5-48	3.4	1.6	T-48	6.8	3.1
54	1372	53 1/2	1359	RS4-54	2.2	1.0	RS5-54	3.9	1.8	T-54	7.6	3.5
60	1524	59 1/2	1511	RS4-60	2.4	1.1	RS5-60	4.3	2.0	T-60	8.4	3.9
66	1676	65 1/2	1664	RS4-66	2.7	1.3	RS5-66	4.7	2.2	T-66	9.3	4.3
72	1829	71 1/2	1816	RS4-72	2.9	1.4	RS5-72	5.1	2.4	T-72	10.1	4.6
84	2134	83 1/2	2121	RS4-84	3.4	1.6	RS5-84	6.0	2.8	T-84	11.8	5.4
96	2438	95 1/2	2426	RS4-96	3.9	1.8	RS5-96	6.8	3.1	T-64	13.5	6.2
108	2743	107 1/2	2731	RS4-108	4.3	2.0	RS5-108	7.7	3.5	T-108	15.2	6.9
120	3048	119 1/2	3035	RS4-120	4.8	2.2	RS5-120	8.5	3.9	T-120	16.8	7.7
132	3353	131 1/2	3340	RS4-132	5.3	2.4	RS5-132	9.4	4.3	T-132	18.5	8.4

* Suggested 6" 150mm Centers Both Ways – Bottom Only
**Furnished with 2 – 3/8" x 3/4" 10 x 19mm Capscrews to Secure Ends

BMK/KSL-10 DETAILS

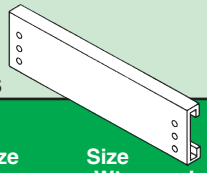
MODULAR CORNERS



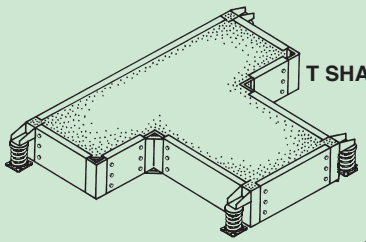
Size	Used With	Ship Wt. Each (lbs)	(kgs)
BMC-10-G	SLF -B,-B2,-C,-C2 SLF(H) 101-109, 126-131	9.0	4.0
LBMC-10-H RBMC-10-H	SLF(H) -2,-2-C2,-3,-3-C2 SSLFH -B,-B2,-C,-C2	17.0	7.7
LBMC-10-J RBMC-10-J	SLF(H) -4,-4-C2	19.0	8.6
LBMC-10-K RBMC-10-K	SLF(H) 108-114, 132-138, 154-161	23.0	10.5
LBMC-10-L RBMC-10-L	SLF(H) 150-153	17.0	7.7
BMC-10-N	No Isolation, Isolation Under Base or T Shaped Base Corners	6.5	2.9

Furnished with all bolting hardware as required.

MODULAR SIDES & ENDS

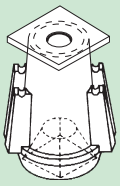


Overall Base Dimensions Either Sides or Ends Length (in)	(mm)	Size	Size Wt (lbs)	(kgs)	Length (in)	(mm)
30	762	SE10-22	7	3.4	22	559
36	914	SE10-28	9	4.1	28	711
42	1067	SE10-34	11	5.2	34	864
48	1219	SE10-40	13	6.1	40	1016
54	1372	SE10-46	15	7.0	46	1168
60	1524	SE10-52	17	7.9	52	1321
66	1676	SE10-58	19	8.8	58	1473
72	1829	SE10-64	21	9.7	64	1626
84	2134	SE10-76	25	11.5	76	1930
96	2438	SE10-88	41	18.6	88	2235
108	2743	SE10-100	47	21.1	100	2540
120	3048	SE10-112	56	25.5	112	2845
132	3353	SE10-124	62	28.3	124	3150
144	3658	SE10-136	68	31.0	136	3454



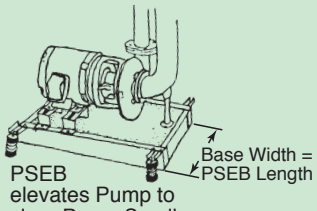
T SHAPED BASE

ASSEMBLY LABOR

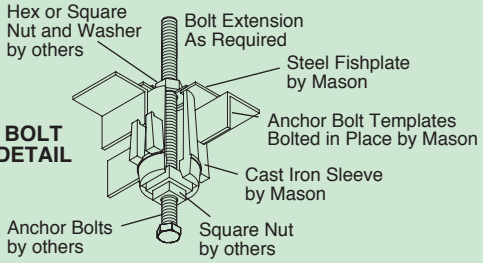


ANCHOR BOLT SLEEVE WITH 2"x 2" 51 x 51mm FISHPLATE

Size	Ship Wt (lbs)	(kgs)
ABS	1.25	0.57



PSEB elevates Pump to clear Pump Scroll

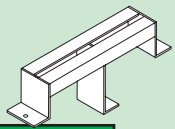


ANCHOR BOLT SLEEVE DETAIL

CROSS CORNER FRAME STIFFENER

Size	Length (in)	(mm)	Ship Wt (lbs)	(kgs)
CCFS-36	36	914	3.5	1.6

One used per base over 4' 1219mm in width to square base and stiffen during shipment if reinforcement is not welded in place.



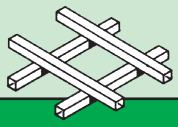
PUMP SCROLL ELEVATION BRIDGE

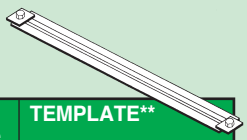
Size	Length (in)	(mm)	Ship Wt (lbs)	(mm)
PSEB-18	18	457	8.0	3.4
PSEB-24	24	610	9.5	4.2

SQUARE HEAD ANCHOR BOLT & NUTS

Size & Length (in)	(mm)	Ship Wt (lbs)	(kgs)
3/8 x 4 1/2	10 x 114	0.2	0.10
1/2 x 4 1/2	13 x 114	0.3	0.14
5/8 x 4 1/2	16 x 114	0.5	0.23
3/4 x 4 1/2	19 x 114	0.8	0.37

4 1/2" 114mm long Anchor Bolts will extend 1 1/2" 38mm above poured concrete. Anchor Bolts are furnished with a steel washer and nut.



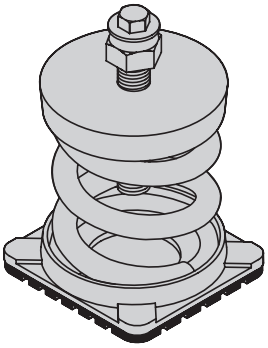


REINFORCING STEEL & MODULAR ANCHOR BOLT TEMPLATES

Base Dimensions (in)	(mm)	Bar or Template Length (in)	(mm)	REINFORCING STEEL* 3/8" 10 mm Square Size	Ship Wt (lbs)	(kg)	1/2" 13 mm Square Size	Ship Wt (lbs)	(kg)	TEMPLATE** Size	Ship Wt (lbs)	(kg)
30	762	29 1/2	749	RS4-30	1.2	0.6	RS5-30	2.2	1.0	T-30	4.2	2.0
36	914	35 1/2	902	RS4-36	1.5	0.7	RS5-36	2.6	1.2	T-36	5.1	2.4
42	1067	41 1/2	1054	RS4-42	1.7	0.8	RS5-42	3.0	1.4	T-42	5.9	2.7
48	1219	47 1/2	1207	RS4-48	2.0	0.9	RS5-48	3.4	1.6	T-48	6.8	3.1
54	1372	53 1/2	1359	RS4-54	2.2	1.0	RS5-54	3.9	1.8	T-54	7.6	3.5
60	1524	59 1/2	1511	RS4-60	2.4	1.1	RS5-60	4.3	2.0	T-60	8.4	3.9
66	1676	65 1/2	1664	RS4-66	2.7	1.3	RS5-66	4.7	2.2	T-66	9.3	4.3
72	1829	71 1/2	1816	RS4-72	2.9	1.4	RS5-72	5.1	2.4	T-72	10.1	4.6
84	2134	83 1/2	2121	RS4-84	3.4	1.6	RS5-84	6.0	2.8	T-84	11.8	5.4
96	2438	95 1/2	2426	RS4-96	3.9	1.8	RS5-96	6.8	3.1	T-64	13.5	6.2
108	2743	107 1/2	2731	RS4-108	4.3	2.0	RS5-108	7.7	3.5	T-108	15.2	6.9
120	3048	119 1/2	3035	RS4-120	4.8	2.2	RS5-120	8.5	3.9	T-120	16.8	7.7
132	3353	131 1/2	3340	RS4-132	5.3	2.4	RS5-132	9.4	4.3	T-132	18.5	8.4
144	3658	143 1/2	3645	RS4-144	5.8	2.7	RS5-144	10.2	4.7	T-144	20.2	9.2

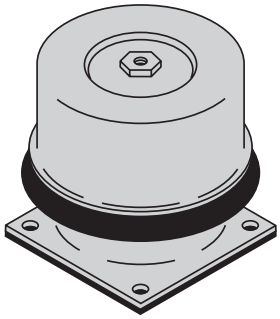
* Suggested 6" 150mm Centers Both Ways – Bottom Only
**Furnished with 2 – 3/8" x 3/4" 10 x 19mm Capscrews to Secure Ends

BMKSL (SLF) Unhoused Spring Mounts



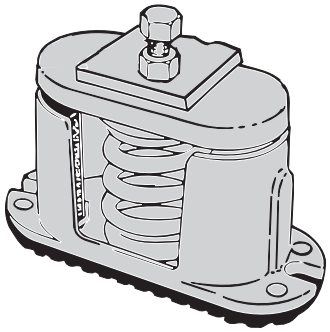
Type SLF spring mounts are designed with extremely stable springs enabling them to resist the fan thrust without the use of supplementary housings. Since there are no snubbers or chocks of any kind, isolation values approach the theoretical. All mounts have acoustical pads and leveling bolts and need not be bolted down. Static deflection up to 5.0" can be attained using stock springs. Specifications should call for minimum .75", 1.5", 2.5", 3.5" or 4.5" deflections. Larger deflections can be provided if specified.

BMKMAS Air Spring Mounts



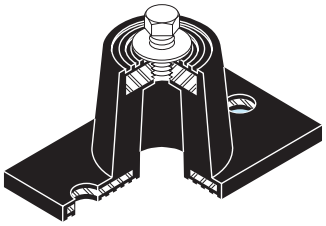
Type MAS air springs are the ultimate isolator as there is no metallic continuity to transmit high frequency noise. Natural frequencies as low as 1.5 Hertz (90 CPM) are attainable with standard devices and the inherent damping minimizes start and stop motion. All air spring systems must be installed with leveling valves to accommodate weight changes and minor air leakage.

BMKC Housed Spring Mounts



Type C spring mounts are designed so that neoprene sponge inserts limit movement during start and stop and prevent contact between the projections of the upper and lower semi-steel castings. These inserts are designed for a minimum of damping in all directions. This is a good design for engineers that prefer housed mountings. Maximum deflection is 1.5".

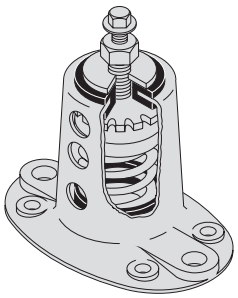
BMKND Double Deflection Neoprene Mounts



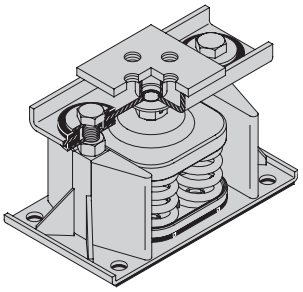
Type ND neoprene mounts are designed for simple installations. The rubber is loaded in both shear and compression to provide the desirable straight line rubber-in-shear deflection curves as well as overload protection. They are molded assemblies with skid resistant rubber ribbed baseplates and need not be bolted to the floor on most installations. Maximum deflection is 0.5".

BMK SEISMIC BASES

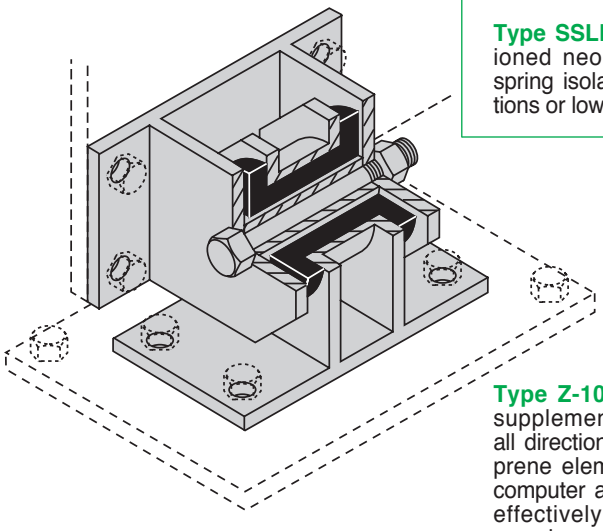
Seismic or blast requirements vary in different zones, states and countries. Specifications may require restraints that can be provided by the following devices.



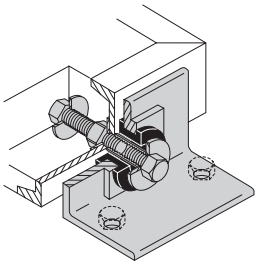
Type SSLFH– All directional 1/4" cushioned neoprene snubbing built into a spring isolator. Primarily static specifications or lower dynamic requirements.



Type SLROS– All directional 1/4" cushioned neoprene snubbing built into a spring isolator. Primarily static specifications.



Type Z-1011– Completely engineered supplementary dynamic snubber with all directional 3/4" thick replaceable neoprene elements. Most often applied by computer analysis but can be used very effectively without analysis based on experience in similar zones.



Z-1225– Supplementary all directional snubber used with any type of isolator. 1/4" cushioned neoprene snubbing. Primarily static specifications or lower dynamic requirements.