



# MASON INDUSTRIES, Inc.

Manufacturers of Vibration Control Products

350 Rabro Drive  
Hauppauge, NY 11788  
631/348-0282  
FAX 631/348-0279

2101 W. Crescent Ave., Suite D  
Anaheim, CA 92801  
714/535-2727  
FAX 714/535-5738

Info@Mason-Ind.com • www.Mason-Ind.com

## FREE STANDING SPRING MOUNTS and HEIGHT SAVING BRACKETS

TYPE  
**SLF**  
SLF-200-8.1

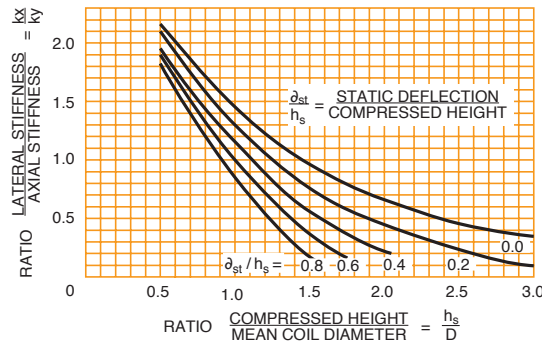
The Type **SLF** spring design evolved after many years of experience using springs within guided housing as the primary isolator. Since the old housing acted telescopically, the internal springs were designed for vertical stiffness and deflection only. Early attempts to use these tall slender springs out of their housing failed as the springs showed immediate instability or they fell over when subjected to minor horizontal forces.

It was important to eliminate the housing as they had a tendency to bind whenever they were cocked and to transmit vibration in the horizontal directions. We knew that if the springs were unhampered they would not only do better vertically, but do an equally fine job in isolating the horizontal disturbances.

Our research showed that springs could be designed with horizontal stiffnesses as high, or even higher than the vertical by carefully adhering to the ratios of the spring's compressed height to the mean coil diameter, and the static deflection to the compressed height as shown in the graph.



**SINGLE SPRING**  
1" 25mm Deflection  
SLF MOUNT



Starting with the 1" 25mm deflection series, we paid great attention to these design factors and our springs became short stable columns. When we had tested and were completely satisfied with the 1" 25mm designs, we moved on the 2" 51mm, 3" 76mm, 4" 102mm and 5" 127mm deflection series. Every spring table now includes data on the ratio of the spring diameter to the compressed height, and the ratio of the horizontal to the vertical spring constants. Our specifications suggest a minimum ratio of 0.75 between the spring diameter and the compressed height as a good working rule, although some of our designs exceed this number.

All of these springs are designed so as not to exceed the elastic limit when the coils are closed up and the springs are compressed solid. This prevents damage when the springs are overloaded and assures a return to the spring's free height. The rated loads and deflections allow for 50% additional travel to solid to accommodate weight distribution errors and to keep the springs operating in a low stress range. In our Nominal 1" 25mm Deflection A, B, and C Spring series the smallest rated deflection is 1" 25mm although some of the lighter springs can deflect as much as 2" 51mm. The springs are used individually or in clusters to develop greater capacity. Some of our B2 and C2 springs only meet competitive criteria and do not have 50% additional travel. This is clearly noted in our catalog Data Sheet DS-208.



**SINGLE SPRING**  
1" 25mm Deflection  
SLFH MOUNT



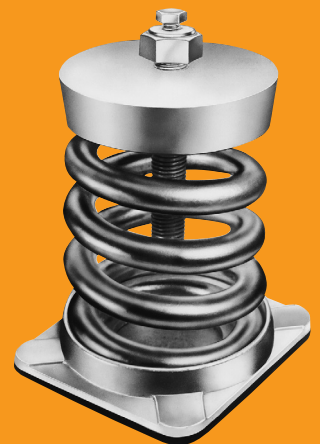
**MULTIPLE SPRING**  
1" 25mm Deflection  
SLF MOUNT

In an effort to develop a foolproof simple isolator using these sophisticated springs, we have merely added a neoprene friction pad on the bottom to help prevent the passage of noise and a spring loading and adjustment bolt at the top with a locking cap screw. You will find that these adjustment bolts are very substantial because they must be made rigid enough to maintain the alignment of the top of the spring with the base plate, and the head of the bolt is actually the equipment supporting surface. The bolts are tapped to receive the locking cap screw as this methods makes it easy to remove the isolator for servicing. The 5" 127mm deflection springs are sometimes furnished with three adjustment bolts in a tripod arrangement to maintain the top plate stability. Other stabilizing methods use single oversized bolts or pull-down brackets. In some cases **SLF** mountings with smaller deflections are similarly designed when there are large horizontal forces such as in the isolation of a horizontal compressor. There is no need to bolt this mounting down in most cases because of the friction pad and the spring's reduction of the horizontal forces before they get down to the base plate.

**SLF** mountings of the proper deflection are recommended for all vibration control applications where it is not necessary to cope with weight removal or seismic and wind load problems. Excessive discharge pressures can be dealt with by adding mass through the use of floating inertia bases or where mass is not a practical solution, by the addition of horizontal thrust restraints.

**SINGLE SPRING**  
2" 51mm,  
3" 76mm,  
4" 102mm and  
5" 127mm  
Deflection  
SLF MOUNT

Steel Holders  
(Top & Bottom)  
are used when  
spring O.D.  
exceeds 7 3/4"  
197mm



The **SLFH** series of mounts are identical to the style **SLF** except for having two or four holes in the base to allow for bolting to the structure. Since it is expensive to bolt mountings down, and any bolting procedure tends to bypass the acoustical action of the neoprene pad on the bottom of the mounting, it is strongly recommended that you use the Type **SLF** unless the **SLFH** must be used because of elevated installations on steel beams, etc.

## BELT DRIVEN CENTRIFUGAL FAN and MOTOR

SLF springs are used to isolate all kinds of fan equipment. Deflections are determined by fan speed, size, motor horsepower and equipment location as discussed in the VCS-100 Engineering Specification and Selection Guide. Bases may be made of structural steel or concrete. The sketch shows a centrifugal fan on a type WFSL base with 3" 76mm deflection springs.

## UTILITY SET

Utility sets are normally direct mounted on 1" 25mm deflection SLF springs as illustrated. ICS rails are used in conjunction with the springs when higher deflections are required or there is an unsupported fan scroll that causes over balancing. KSL concrete filled bases are recommended for outdoor locations because of the need for wind resistance.

## FACTORY ASSEMBLED AIR HANDLING EQUIPMENT

Factory assembled air handling equipment may be direct mounted as shown or placed on ICS rails when higher deflections are called for. It is important to study the equipment base or legs to determine whether rails are needed for structural reinforcement.

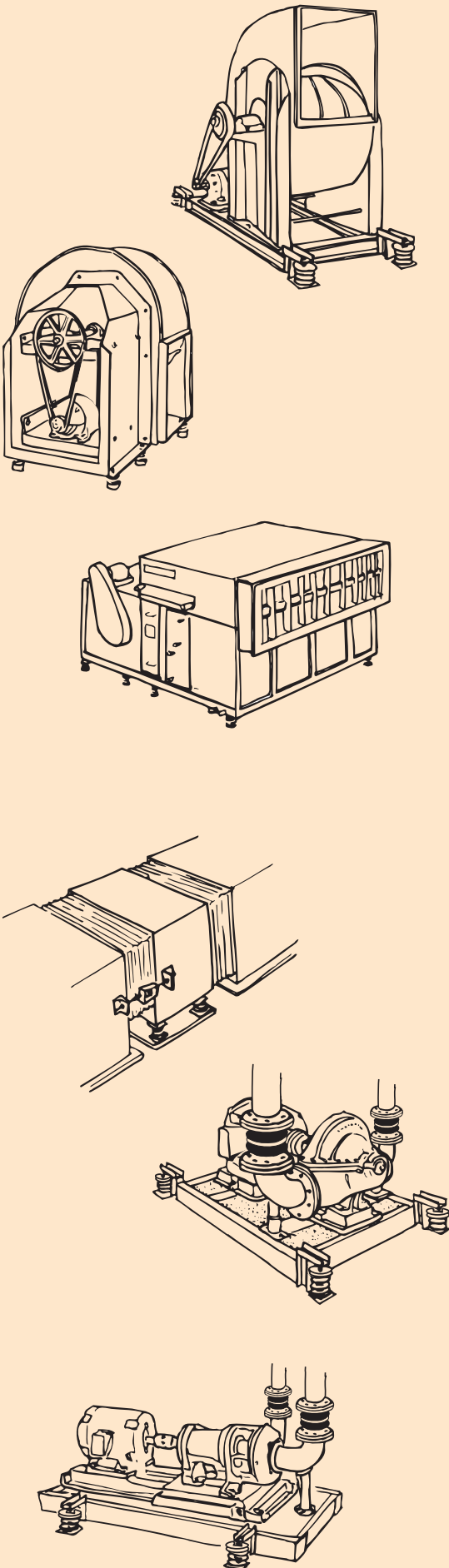
## FAN HEAD

A fan head develops high horizontal thrust because of the negative pressure on the very large inlet area. The SLF springs cannot handle this thrust without Horizontal Thrust Restraints as sketched or massive concrete filled bases to increase the resistive weight and spring constants.

## END SUCTION PUMP or DOUBLE SUCTION PUMP

SLF spring mountings of the proper deflection are recommended for all pump isolation problems. While steel bases may be used, concrete is preferred for greater rigidity and the possibility of grouting in the pump base. Bases should be made large enough to support the suction and discharge elbows whenever possible. Thus, Double Suction bases become wide and End Suction bases long.

SLF applications are by no means limited to these sketches. We have merely tried to illustrate the many modes of application and some of the design considerations.



**VERTICAL PUMPS**

Vertical pump bases using SLF mountings should be made large enough for stability and extended as required to support the piping before attachment to the pump flanges. This piping support reduces the strain on the pump casing.

**CLOSE COUPLED PUMP**

Close coupled pumps are generally unstable when mounted directly on SLF mountings because they are small in configuration and have a severe overhang on the pump end. A concrete base makes them less sensitive to external forces so the installation becomes much more workmanlike and practical. SLF deflections depend on location and pump size.

**DIRECTLY DRIVEN REFRIGERATION COMPRESSOR UNIT**

1" **25mm** deflection SLF mountings can be directly attached to the isolated equipment. Mountings of different capacities would be used at the two ends to compensate for the uneven weight distribution and provide reasonably uniform deflection. This use of springs of different capacity but the same potential deflection applies to all isolator selections.

**BELT DRIVEN AIR COMPRESSOR**

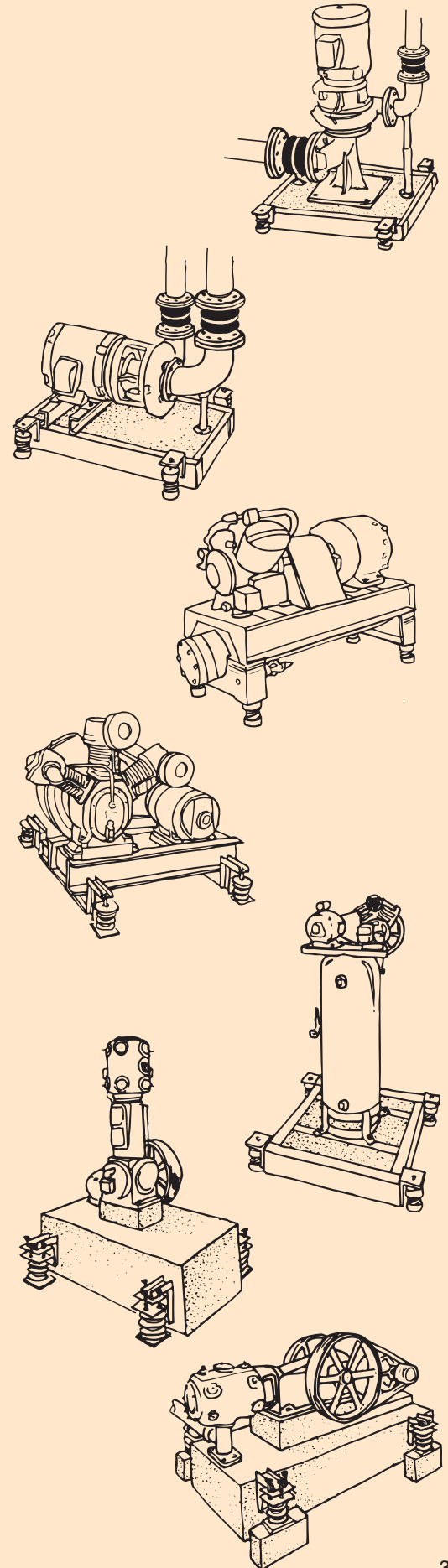
When 2" **51mm** or higher deflection SLF mountings are used we normally recommend ICS rails to minimize elevations. In this particular case the rails project beyond the flywheel to compensate for the overhang. The higher deflections are used to increase efficiency at the low operating speed.

**VERTICAL TANK TYPE AIR COMPRESSOR**

It is important to exercise caution when applying spring mountings to tall machines with small base dimensions. The use of a concrete filled type K base with SLF mountings lowers the center of gravity in addition to enlarging the base dimensions. Thus, the installation becomes much more stable.

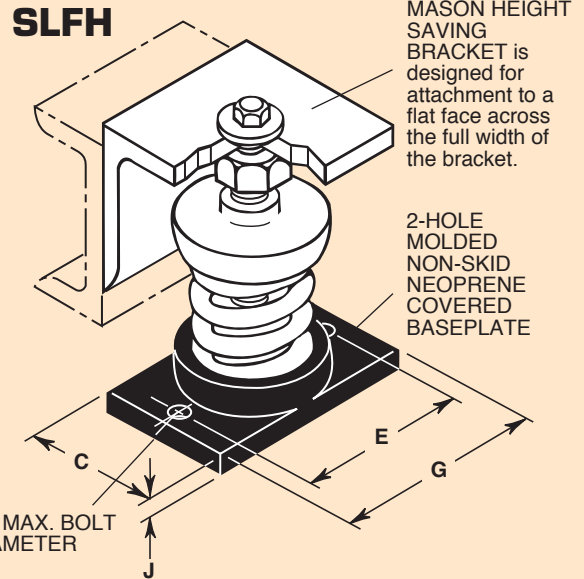
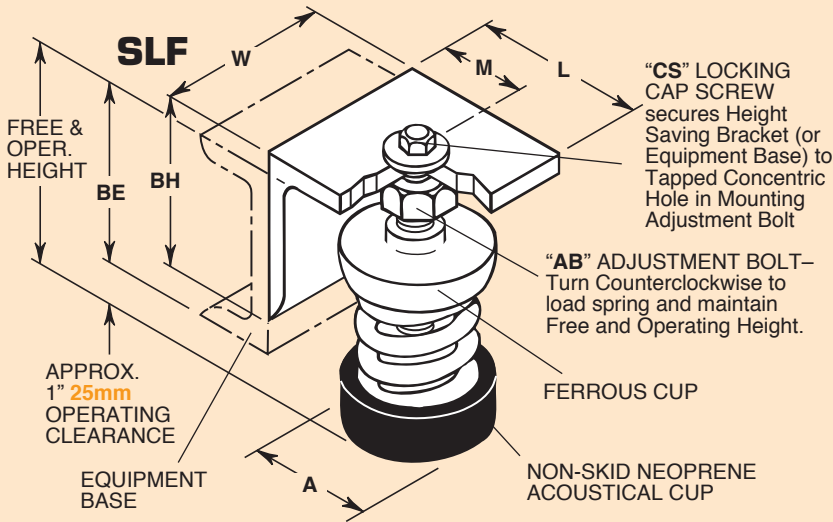
**SLOW SPEED VERTICAL or HORIZONTAL COMPRESSOR or VACUUM PUMP**

Slow speed, large bore and stroke reciprocating compressors or vacuum pumps have large residual unbalanced forces that make direct mounting impossible because of excessive motion. The concrete inertia block mass is calculated from unbalanced force data supplied by the manufacturer. It is often as much as seven times the equipment weight. Vertical compressors are located over the combined vertical center of gravity. The springs under horizontal compressors are elevated to the horizontal CG. Three adjustment bolts are most important to maintain horizontal SLF stiffness.



## 1" 25mm Deflection SLF SINGLE SPRING MOUNTS

Change designation to SLFH when base plate with bolt holes is required.



Matching Height Saving Bracket BH- Bracket Height BE- Bracket Elevation

Type	Size	L (in) (mm)	M (in) (mm)	W (in) (mm)	BE (in) (mm)	BH (in) (mm)
SLF-	X	2 1/2 64	2 51	3 76	2 3/4 70	2 1/2 64
SLFH-	A-45 – A-400	2 1/2 64	2 51	3 76	3 1/4 83	2 1/2 64
	A-510 – A-625	2 1/2 64	2 51	3 76	3 5/8 92	2 1/2 64
	B & C	4 102	2 3/4 70	3 76	5 127	4 102

All springs have additional travel to solid equal to 50% of the rated deflection.  
Solid Spring Height = Free Height minus 1.5 times Rated Deflection.

## Ratings & Dimensions for 1" 25mm Deflection Single Spring Mounts (inches mm)

Type	Size	Rated Capacity (lbs) (kg)	Rated Defl. (in) (mm)	Spring Constant (lbs/in) (kg/mm)	Spring Color	Spring Only Spring Free OD Height	Free & Oper Ht	A	C	E	G	Max. Bolt Dia. H	J	Adjustment Bolt AB	Locking Cap Screw CS							
SLF-	X-12†	12 5	1.25 32	10 0.18	Orange	11 1/2 21 1/2 38 64	33 3/4 2	-	-	-	-	-	-	1/2 x 21/2	1/4 x 1							
	X-23†	23 10	1.50 38	18 0.26	Brown																	
	X-33†	33 15	1.30 33	30 0.45	Red																	
	X-54†	54 24	1.40 36	45 0.67	White																	
	X-76†	76 34	1.22 31	73 1.10	Black																	
	X-113†	113 51	1.20 30	113 1.70	Yellow																	
	X-130†	130 59	1.20 30	130 1.97	Purple																	
	X-175†	175 79	1.20 30	175 2.63	Silver																	
	X-210†	210 95	1.20 30	210 3.17	Blue																	
	SLFH-	A-45	45 20	1.60 41	28 0.49											Blue	13 3/4 3 44 76	41 1/4 21 3/8	21 3/4	21 3/4	3	33 3/4
A-75		75 34	1.50 38	50 0.89	Orange																	
A-125		125 57	1.33 34	94 1.68	Brown																	
A-200		200 91	1.15 29	174 3.14	Black																	
A-310		310 141	1.00 25	310 5.64	Yellow																	
A-400		400 181	1.00 25	400 7.24	Green																	
A-510		510 231	1.00 25	510 9.24	Red																	
A-625		625 283	1.00 25	625 11.32	White																	
B-65		65 29	2.10 53	31 0.55	Brown	23 3/8 4 60 102	6 23 3/4	27 3/8	41 3/8	53 3/8	1 1/2 3 3/8	7 3/8 x 41 3/4	1 1/2 x 11 3/4									
B-85		85 39	2.10 53	40 0.74	White††																	
B-115	115 52	2.00 51	57 1.02	Silver																		
B-150	150 68	2.00 51	75 1.33	Orange																		
B-280	280 127	1.60 41	174 3.10	Green																		
B-450	450 204	1.31 33	344 6.18	Red																		
B-750	750 340	1.12 28	670 12.14	White																		
B-1000	1000 454	1.00 25	1000 18.16	Blue																		
C-1000	1000 454	1.00 25	1000 18.16	Black	21 1/4 41 3/8 73 105									6 31 1/4	33 3/8	43 3/4	61 3/8	1 1/2 3 3/8	7 3/8 x 41 3/4	1 1/2 x 11 3/4		
C-1350	1350 612	1.00 25	1350 24.48	Yellow																		
C-1750	1750 794	1.00 25	1750 31.76	Black*																		
C-2100	2100 953	1.00 25	2100 38.12	Yellow*																		
C-2385	2385 1082	1.00 25	2385 43.28	Yellow**																		
C-2650	2650 1202	1.00 25	2650 48.08	Red*																		
C-2935	2935 1331	1.00 25	2935 53.24	Red**																		



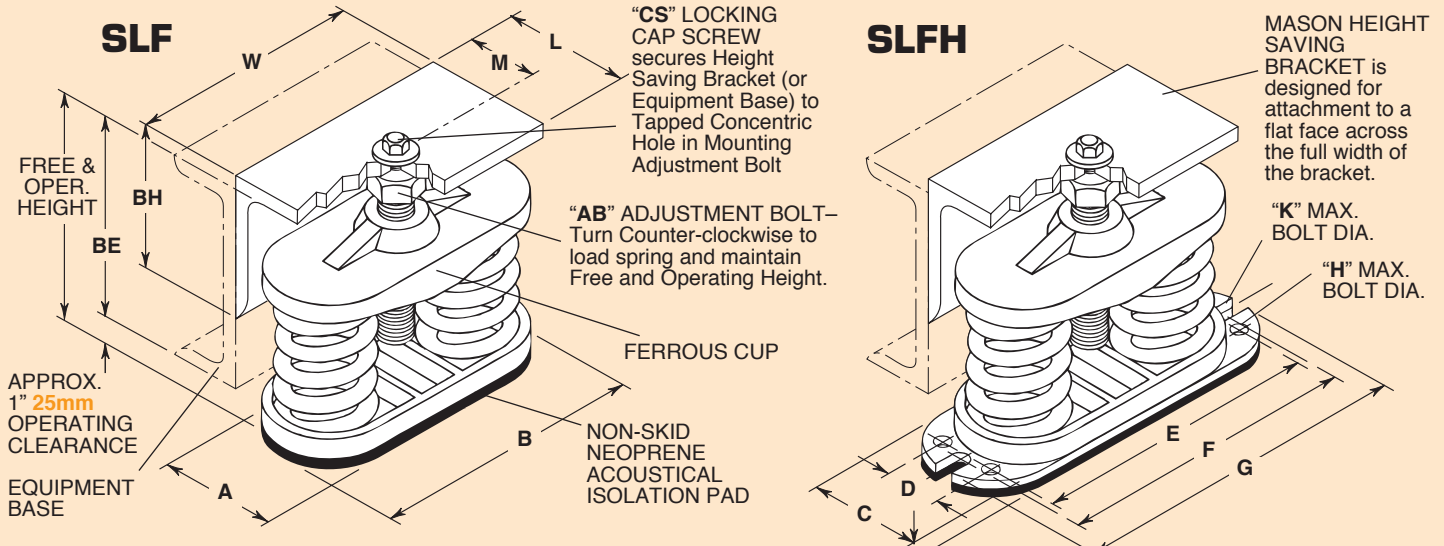
**1" 25mm Deflection  
SLF MULTIPLE SPRING MOUNTS**

Change designation to SLFH when base plate with bolt holes is required.

All springs have additional travel to solid equal to 50% of the rated deflection.

Solid Spring Height = Free Height minus 1.5 times Rated Deflection.

Multiple spring mounts have C size springs. SLF-2, SLF-3, SLF-4, SLF-6, SLF-9, SLF-12 & SLF-16 have 2, 3, 4, 6, 9, 12 & 16 springs respectively.

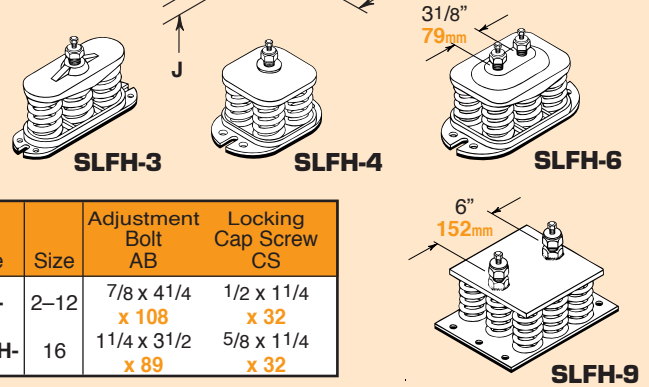


**Matching Height Saving Bracket**

BH- Bracket Height  
BE- Bracket Elevation

Type	Size	L (in) (mm)	M (in) (mm)	W (in) (mm)	BE (in) (mm)	BH (in) (mm)
SLF- SLFH-	2	4 102	2 1/2 64	6 152	5 127	4 102
	3	4 102	2 1/2 64	7 178	5 127	4 102
	4	6 152	4 102	8 1/2 216	5 127	6 152
	6	7 178	5 127	11 3/4 298	5 127	7 178
	9	8 203	5 1/2 140	11 3/4 298	5 1/4 133	7 178
	12 16		Mounts have 2 adjustment bolts and special brackets are required.			

Type	Size	Adjustment Bolt AB	Locking Cap Screw CS
SLF-	2-12	7/8 x 4 1/4 x 108	1/2 x 1 1/4 x 32
SLFH-	16	1 1/4 x 3 1/2 x 89	5/8 x 1 1/4 x 32



**Ratings & Dimensions for 1"(25mm) Deflection Multiple Spring Mounts (inches mm)**

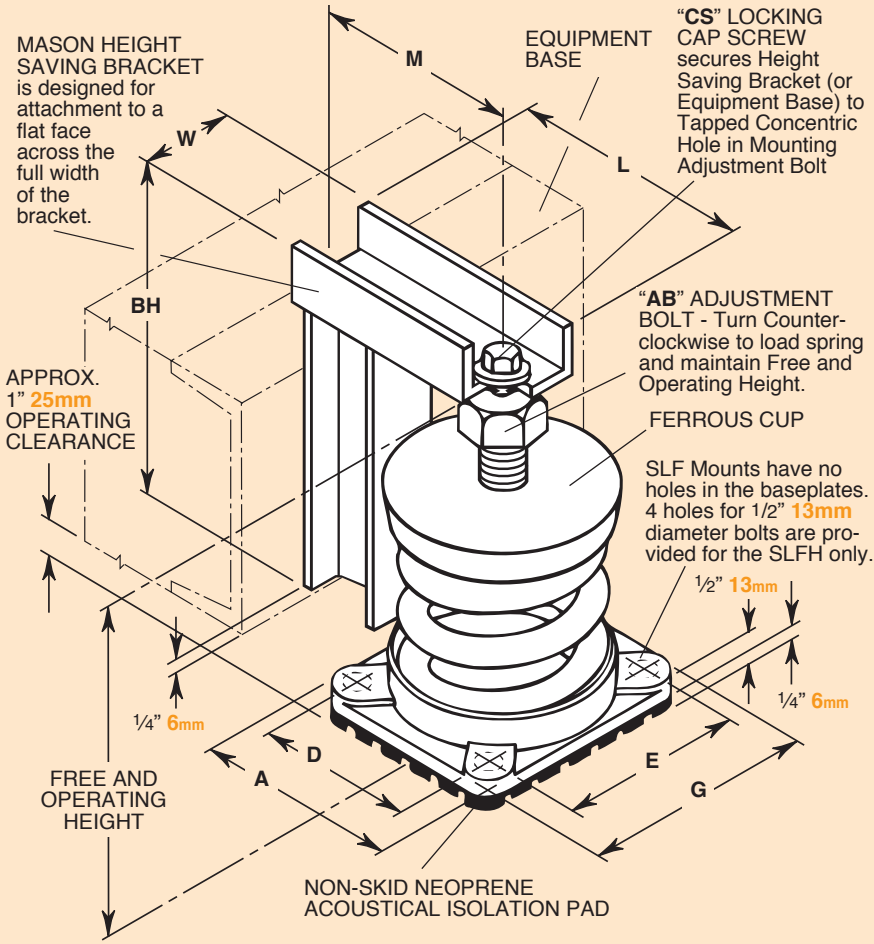
Type	Size	Rated Capacity (lbs) (kg)	Rated Defl. (in) (mm)	Spring Constant (lbs/in) (kg/mm)	Spring Color/Stripe	Spring Only		Free & Oper Ht	Dimensions (inches mm)							Hole Max. Bolt Dia. H	Slot Max. Bolt Dia. K	
						Spring OD	Free Height		A	B	C	D	E	F	G			J
SLF-	2-2700	2700	1.00	2700	Yellow	27/8	41/8	6	31/4	73/4	31/4	13/4	81/4	81/2	10	5/16	1/2	3/8
	2-3500	3500	1.00	3500	Black*	73	105	152	83	197	83	44	210	216	254	8	13	10
	2-4200	4200	1.00	4200	Yellow*													
	3-5250	5250	1.00	5250	Black*	27/8	41/8	6	33/8	91/2	33/8	13/4	10	101/4	113/4	5/16	1/2	3/8
	3-6300	6300	1.00	6300	Yellow*	73	105	152	86	241	86	44	254	260	298	8	13	10
	3-7155	7155	1.00	7155	Yellow**													
3-7950	7950	1.00	7950	Red*														
SLFH-	4-5400	5400	1.00	5400	Yellow	27/8	41/8	6	61/4	61/4	61/4	21/4	71/2	71/2	93/8	1/2	1/2	1/2
	4-7000	7000	1.00	7000	Black*	73	105	152	159	159	159	57	191	191	238	13	13	13
	4-8400	8400	1.00	8400	Yellow*													
	6-12600	12600	1.00	12600	Yellow*	27/8	41/8	6	63/8	91/2	63/8	21/4	103/4	103/4	125/8	1/2	1/2	1/2
	6-14310	14310	1.00	14310	Yellow**	73	105	152	161	241	161	57	273	273	321	13	13	13
	6-15900	15900	1.00	15900	Red*													
	6-17610	17610	1.00	17610	Red**													
	9-18900	18900	1.00	18900	Yellow*	27/8	41/8	7	9	9	9	6	11	—	121/2	1/2	1/2	—
	9-21465	21465	1.00	21465	Yellow**	73	105	178	229	229	229	152	279	—	318	13	13	—
	9-23850	23850	1.00	23850	Red*													
SLFH-	12-25200	25200	1.00	25200	Yellow*	27/8	41/8	7	9	12	9	6	14	—	151/2	1/2	1/2	—
	12-28620	28620	1.00	28620	Yellow**	73	105	178	229	305	229	152	356	—	394	13	13	—
	12-31800	31800	1.00	31800	Red*													
	16-33600	33600	1.00	33600	Yellow*	27/8	41/8	8	12	13	12	6	15	—	161/2	1/2	1/2	—
16-38160	38160	1.00	38160	Yellow**	73	105	203	305	330	305	152	381	—	419	13	13	—	

\*with RED inner spring \*\*with GREEN inner spring

Mounts in gray area have steel holders top and bottom.

## 2" 51mm, 3" 78mm, 4" 102mm & 5" 127mm Deflection 100 Series SLF SPRING MOUNTS

Change designation to SLFH when base plate with bolt holes is required.



All springs have additional travel to solid equal to 50% of the rated deflection.  
 Solid Spring Height = Free Height minus 1.5 times Rated Deflection.

### Matching Height Saving Bracket

		BH- Bracket Height				
Type	Size	L (in) (mm)	M (in) (mm)	W (in) (mm)	BH (in) (mm)	
2" 51mm Defl.	101-107	6 152	5 127	3 76	9 229	
	108	8 1/2 216	7 1/2 191	4 102	10 3/4 273	
	109	9 229	8 203	4 102	11 3/4 298	
	110					
	111					
	112	12 305	10 1/2 267	6 152	14 356	
	113					
	114	12 305	10 1/2 267	6 152	15 1/4 416	
	115					
	116-118	12 1/2 318	11 279	6 152	16 7/8 429	
Mounts have special adjustment bolts and brackets as required.						
3" 76mm Defl.	126-131	8 1/2 216	7 1/2 191	4 102	10 3/4 273	
	132	9 229	8 203	4 102	11 3/4 299	
	133-136	9 1/2 241	8 1/2 216	4 102	13 330	
	137-138	12 1/2 318	11 279	6 152	16 7/8 429	
	139	12 1/2 318	11 292	6 152	18 1/8 460	
	140	13 330	11 1/2 279	6 152	19 1/8 486	
	141-143					
	Mounts have special adjustment bolts and brackets as required.					
	4" 102mm Defl.	150-153	7 178	6 152	4 102	10 3/8 264
		154-155	9 1/2 241	8 1/2 216	4 102	12 305
156-158		9 1/2 241	8 1/2 216	4 102	13 1/4 337	
159		9 1/2 241	8 1/2 216	4 102	14 1/4 362	
160-162		11 1/8 283	9 5/8 244	4 102	16 1/2 420	
163-165		13 1/2 343	12 305	6 152	20 1/4 514	
166-167		14 1/2 368	13 330	6 152	22 1/2 572	
168-169						
Alternate brackets as required. (See page 8)						
5" 127mm Defl. SLF-SLFH-		174-198	Matching Height Saving Bracket as shown in illustration on page 6. Pulldown Brackets or three Adjustment Bolts are designed for each special application as required. (See page 8)			

### Ratings & Dimensions for 2" 51mm Deflection 100 Series Spring Mounts (inches mm)

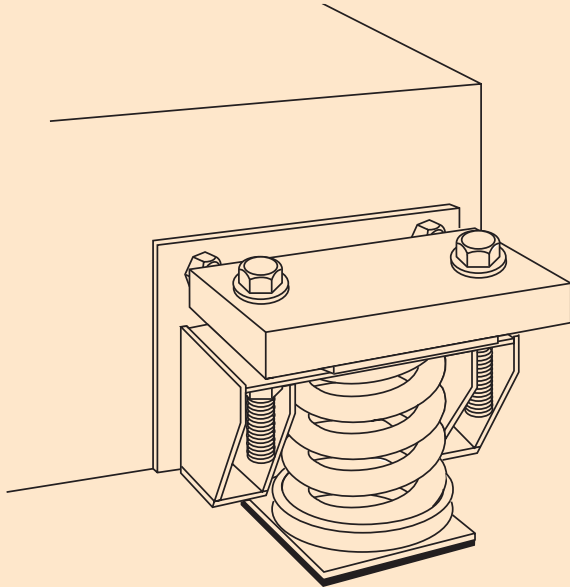
Type	Size	Rated Capacity (lbs) (kg)	Rated Defl. (in) (mm)	Mount Constant (lbs/in) (kg/mm)	Spring Color/Stripe	Spring Only				Free & Oper Ht	A	D	E	G	Adjustment Bolt AB	Locking Cap Screw CS
						Spring OD	Free Height									
2" 51mm Defl.	101	125 57	2.50 64	50 0.89	Purple	33/4 95	53/4 146									
	102	200 91	2.50 64	80 1.42	Brown	33/4 95	53/4 146									
	103	310 141	2.50 64	125 2.20	Pink	33/4 95	53/4 146									
	104	500 227	2.50 64	200 3.55	Green	33/4 95	53/4 146	7 1/4 184	4 1/4 108	33/8 86	37/8 98	43/4 120	7/8x53/4 x 146	1/2x11/4 x 34		
	105	740 336	2.40 61	310 5.51	Red	33/4 95	53/4 146									
	106	1050 476	2.10 53	500 8.98	White	33/4 95	57/8 149									
	107	1400 635	2.00 51	700 12.45	Blue	33/4 95	57/8 149									
SLF-	108	1660 753	2.05 52	810 14.48	Silver	4 1/2 114	6 3/4 171	8 3/8 213	5 127	4 102	4 1/4 108	5 1/4 133	7/8x53/4 x 146	1/2x11/4 x 34		
	109	2250 1021	2.00 51	1125 20.02	Orange	4 1/2 114	7 1/2 191	9 229	5 127	4 102	4 1/4 108	5 1/4 133				
	110	3000 1361	2.00 51	1500 26.69	Gray	5 127	7 1/2 191	9 229	5 1/2 140	4 1/4 108	5 1/4 133	6 1/2 165				
	111	4000 1814	2.00 51	2000 35.57	Tan	5 127	7 1/2 191	9 229	5 1/2 140	4 1/4 108	5 1/4 133	6 1/2 165				
SLFH-	112	5300 2404	2.00 51	2665 47.14	Black	5 1/2 140	8 1/2 216	10 1/8 257	6 152	4 3/4 121	5 3/4 146	7 178				
	113	7100 3221	2.00 51	3550 63.16	Yellow	6 152	8 3/4 222	10 1/2 267	6 5/8 168	5 1/4 133	6 152	7 1/2 191	1 x 6 x 152	1/2x11/4 x 34		
	114	9300 4218	2.00 51	4650 82.71	Blue/Orng	6 3/4 171	10 254	12 305	7 1/2 191	6 1/4 159	6 1/4 159	7 1/2 191				
	115	12600 5715	2.00 51	6300 112.06	Blue/Red	6 3/4 171	10 254	12 305	7 1/2 191	6 1/4 159	6 1/4 159	7 1/2 191	1 1/4x6 5/8x11/2x38			
	116	16800 7620	2.00 51	8400 149.41	Blue/White	7 3/4 197	10 1/8 257	13 330	8 1/2 216	7 1/4 184	7 1/4 184	8 1/2 216	1 1/2 x 8 x 203	3/4x2 x 51		
	117	28500 12927	2.55 65	11175 198.88	Blue/Silver	8 3/4 222	13 1/8 333	16 406	9 1/2 241	8 203	8 203	9 1/2 241				
	118	40000 18144	2.10 53	19000 342.34	Blue/Gray	9 3/8 238	13 1/8 333	16 406	10 1/2 267	9 1/2 241	9 1/2 241	10 1/2 267	2 x 8 x 21/2	1x21/2 x 64		

Mounts in gray area have steel holders top and bottom.

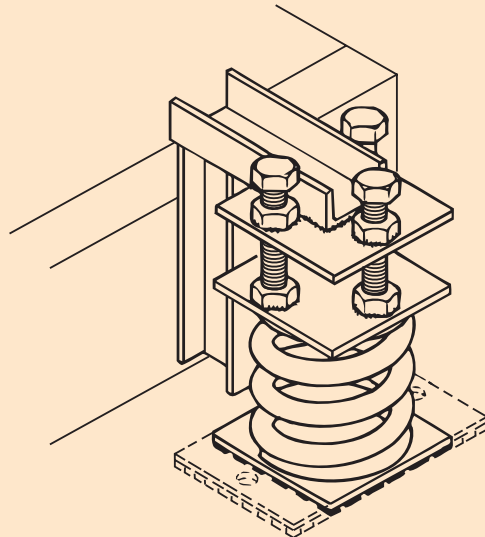


Alternate bracket and spring adjustment methods to improve stability and appearance when using 4" 102mm, 5" 127mm and greater deflection springs.

**PULL-DOWN BRACKET**



**3 ADJUSTMENT BOLTS**



**SPRING CHARACTERISTICS**

Spring Size	Rated Deflection	Ratio Kx/Ky	Ratio OD/OH	Spring Size	Rated Deflection	Ratio Kx/Ky	Ratio OD/OH
X	1.00-1.30	0.75-1.00	0.92-1.40	101-118	2.00-2.55	0.71-1.10	0.82-1.15
A	1.00-1.60	0.50-0.90	0.74-1.25	126-143	3.25	0.72-1.00	0.85-1.36
B	1.00-2.10	0.70-0.90	0.80-1.25	150-169	4.38	0.80-1.10	0.85-1.33
C & Multiples	1.00	0.90-1.10	0.92	174-198	5.27-5.38	0.70-1.00	0.92-1.31

**PRODUCT FINISHES**

All standard products have a painted or powder coated finish unless otherwise indicated. Springs are powder coated or zinc electroplated.

All mounts can be manufactured in stainless steel or hot dipped galvanized at additional cost.



**MASON INDUSTRIES, INC.**

350 Rabro Drive, Hauppauge, NY 11788 • 631/348-0282 • FAX 631/348-0279  
 2101 W. Crescent Ave., Suite D • Anaheim, CA 92801 • 714/535-2727 • FAX 714/535-5738  
 Email info@Mason-Ind.com • Website www.Mason-Ind.com