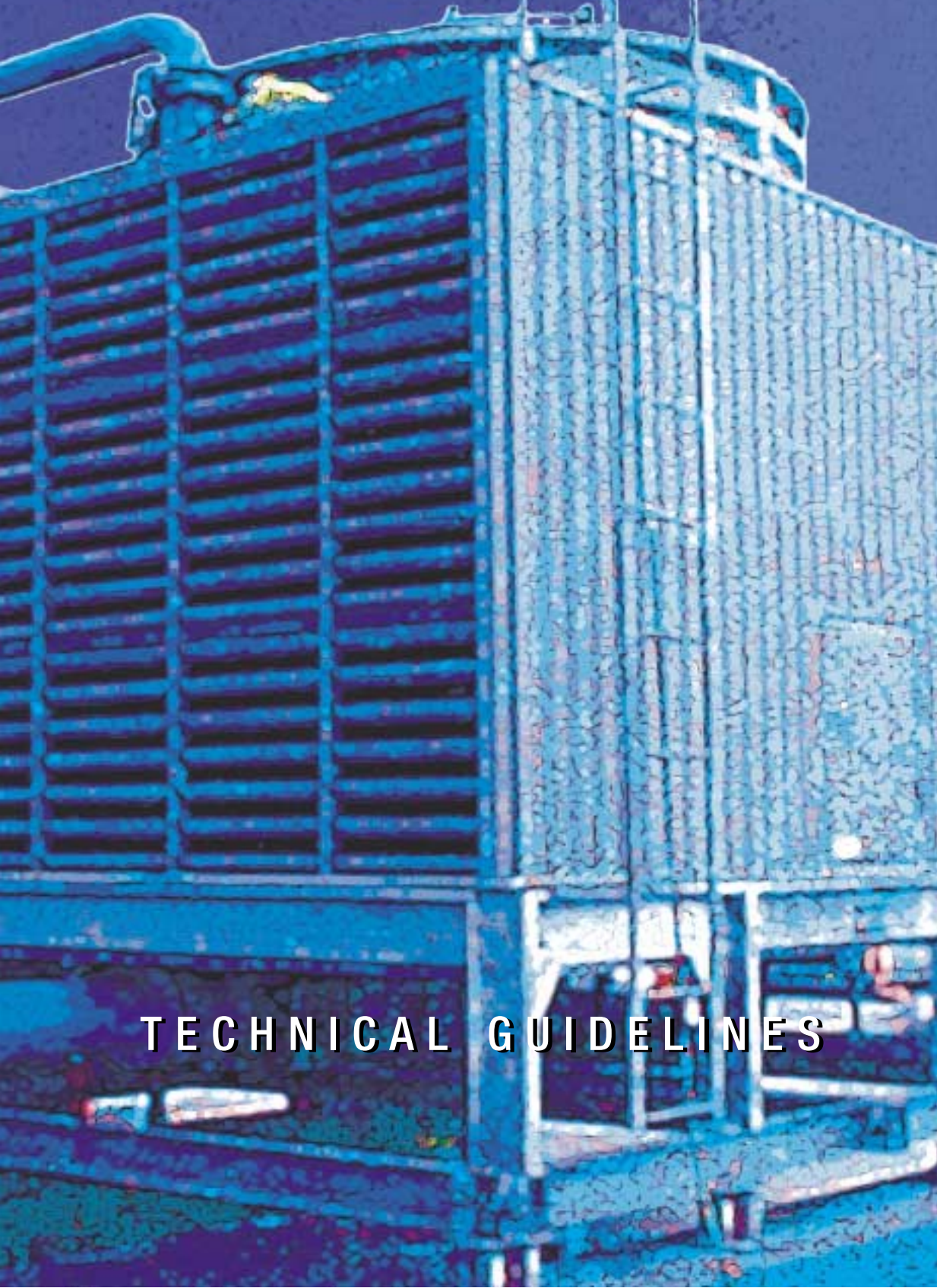




**generalrubber**  
**SoundZorber®**



**TECHNICAL GUIDELINES**



**ISO 9001:2000**  
**CERTIFIED**



New Jersey Operation



Expansion Joints and Flexible Connectors

Since our inception in 1950, General Rubber Corporation has provided engineered solutions utilizing expansion joints and other mechanical rubber products in a wide range of demanding applications. Rubber is extremely compliant and durable, making it an ideal material for car tires, expansion joints and resilient supports.

We are experienced at incorporating advanced materials and technologies to what some may consider a mature product line, resulting in improved performance and solutions to a wider range of demanding applications.

**SoundZorber®** is a brand under General Rubber Corporation representing our noise and vibration control products. Our original product was a simple rubber flanged pipe, pre-dating the spherical expansion joint, used to reduce the noise and vibration generated from mechanical equipment, including pumps, chillers, compressors, fans, heat exchangers and cooling towers. Today's **SoundZorber®** product line includes resilient mounts, hangers, pads and bases, as well as seismic restraints, making it a complete isolation package for the same group of mechanical equipment.

Noise and vibration can represent a serious problem, some finding it more objectionable than poor heating or cooling. This is because an individual can add or remove clothing or use local space heaters or fans when needed. The same individual can do little to dampen noise and vibration. The use of **SoundZorber®** products can effectively eliminate these problems and at a remarkably small cost, typically less than 1/10 of 1% of the mechanical budget.

**SoundZorber®** products are used for both simple and demanding applications. For example, when the building structure is considered stiff, as in the case of ground floor mechanical rooms, the Theoretical Efficiency Equation works well. The efficiency or amount of vibration isolated is based on this relationship between the disturbing frequency  $f_d$  and the natural frequency of support  $f_n$ .  $f_d$  is typically the lowest RPM of the equipment and  $f_n$  is based on the operating deflection of the resilient support. **90% efficiency solves the vast majority of noise and vibration problems and is simply obtained by selecting a resilient support with a  $f_n$  1/3 of  $f_d$ .**



Theoretical Efficiency Equation

$$E = 100 \left[ 1 - \frac{1}{\left( \frac{f_d}{f_n} \right)^2 - 1} \right]$$

$f_d$  = Disturbing Frequency  
 $f_n$  = Natural Frequency of Support

$$= 180 \sqrt{\frac{1}{d}}$$

All rubber supports work well isolating higher frequencies, were as, the addition of coil springs improve the range of frequencies dampened. More demanding applications exist when the support structure is not considered stiff, as in the case of mid-floor mechanical rooms or roof-mounted equipment. Essentially the deflection of the support structure will negate some of the theoretical efficiency. With a trend to lighter construction and larger spans between supports, this more demanding

**Mounts, Hangers and Pads**





application has become common. Complicated equations can be used to theoretically solve these applications, however simply adding a portion of the allowable beam deflection to the calculated static deflection of the resilient support will generally accomplish the same result. Our engineers are pleased to review mechanical equipment tables and recommend a minimum deflection for each equipment and location. Structural steel or concrete bases are available for rigid support of equipment. Concrete bases have the added benefit of being more rigid and thinner than structural steel bases. Their additional mass also helps to lower the amplitude or oscillating deflection that tend to occur with equipment that has a high unbalanced force. **SoundZorber®** bases are available both custom fabricated or modular bolted construction.

**Seismic Restraints** can be applied to both rigid and non-rigid mounted systems. An analytical method for seismic restraint design is used to calculate the seismic force  $F_p$ , applied to the center of gravity of the equipment in the horizontal direction. While many seismic building codes require inspection of only the horizontal loads, we will always inspect the vertical loads as well. Keeping the system in place and avoiding a life-threatening situation is the primary purpose for most seismic building codes. Unfortunately, little importance is often placed on the likely damage to the system as a result of the seismic event. We anticipate that the survivability of the system will become a more important design goal in the near future, particularly for utilities and municipalities providing essential services. This is not a new approach; in fact, I myself, presented a paper back in 1993 at the National Earthquake Conference titled **Seismic Survivability of Piping Systems**. A case study was sighted in the paper where the California Transportation Authority specified expansion joints that would accept the anticipated forces and displacements of a seismic event. The paper also outlined the use of a dynamic response computer analysis to model the system. The program verifies the equipment's restraint, as well as its survivability based on allowable fragility levels. Snubbers, restrained mounts and seismic restraint cables work well in this passive design. An air gap between the restraint and the resilient support is needed for the resilient support to operate under normal conditions. A rubber stopper is typically incorporated in the restraint to decelerate the equipment as it is restrained.



**General Rubber Corporation** has extensive experience working in nuclear power plants, on navy ships, in chemical processing plants, as well as in sports stadiums and commercial buildings. With our modern U.S. ISO 9001:2000 Certified manufacturing facility and top engineering staff, we feel confident we can meet the demands of your project. Thank you for your consideration.

Warm regards,

**Lloyd B. Aanonsen, P.E.**  
*President*

*For a complete line of "Non-Plug Valves" and Expansion Joints solutions, see General Rubber's Flex-Valve® and Maxi Joint Technical Guideline Catalogs.*



# SoundZorber®

## Free Standing Spring Mounts

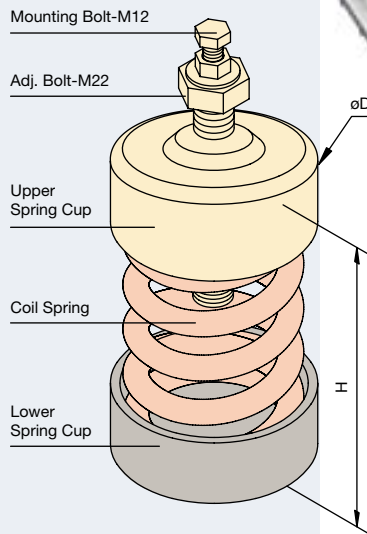
### Style MSF

#### Features:

- Laterally Stable Open Spring Mount
- Non-Skid Base
- Isolates Low and High Frequency Vibration
- 1-3" Deflection Springs Available
- Allows for Easy Installation and Inspection

#### Applications:

- Floor Mounted Pumps, Blowers, Fans and Other HVAC Equipment Having Minimal Horizontal Loads and/or Motion



TYPE	DIMENSIONS	
	H (inch)	D (inch)
MSF	6.22	3.39
MSFA	6.61	3.39
MSFD	6.73	4.13
MSFS	9.05	4.92

PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE	PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE
MSF-2	235	235	1.0	Yellow	MSFD-1-2	224	112	2.0	Yellow
MSF-3	296	296	1.0	White	MSFD-1-3	335	168	2.0	White
MSF-4	397	397	1.0	Green	MSFD-1-5	559	279	2.0	Green
MSF-5	487	487	1.0	Red	MSFD-1-7	782	391	2.0	Red
MSF-6	604	604	1.0	Blue	MSFD-1-9	894	447	2.0	White/Black
MSF-7	677	677	1.0	Red/Black	MSFD-1-10	1006	503	2.0	Brown
MSF-8	794	794	1.0	Blue/Black	MSFD-1-12	1118	559	2.0	Green/Black
MSF-9	880	880	1.0	Brown	MSFD-1-14	1341	671	2.0	Gray
MSF-10	1070	1070	1.0	Brown/Black	MSFD-1-16	1699	849	2.0	Khaki
MSF-12	1262	1262	1.0	Gray	MSFD-1-19	1900	950	2.0	Gray/Black
MSF-14	1452	1452	1.0	Gray/Black	MSFD-1-22	2258	1129	2.0	Khaki/Black
MSF-18	1875	1875	1.0	Khaki					
MSF-22	2200	2200	1.0	Green	MSFS-1-2	218	73	3.0	Yellow
					MSFS-1-3	336	112	3.0	White
MSFA-3	293	196	1.5	Blue	MSFS-1-5	554	185	3.0	Green
MSFA-4	411	274	1.5	Brown	MSFS-1-7	672	224	3.0	Gray
MSFA-6	578	386	1.5	Orange	MSFS-1-8	790	263	3.0	Red
MSFA-7	721	481	1.5	Gray	MSFS-1-10	1008	336	3.0	Blue
MSFA-10	997	665	1.5	Red	MSFS-1-12	1277	426	3.0	Brown
MSFA-14	1358	905	1.5	Green	MSFS-1-14	1445	482	3.0	Khaki
MSFA-16	1534	1023	1.5	Purple	MSFS-1-18	1831	610	3.0	Blue/Black
MSFA-22	2230	1486	1.5	Yellow	MSFS-1-22	2268	756	3.0	Khaki/Black

4



# SoundZorber®

## Horizontally Restrained Spring Mounts

## Style MSC

Horizontally Restrained Spring Mounts

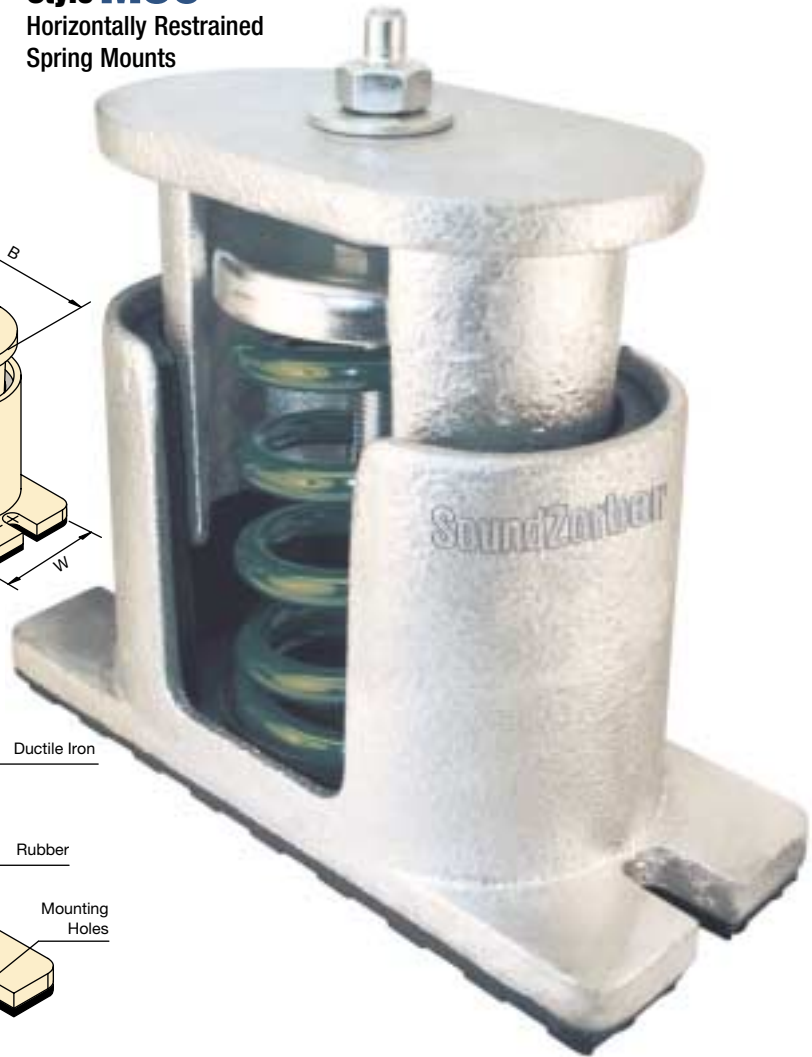
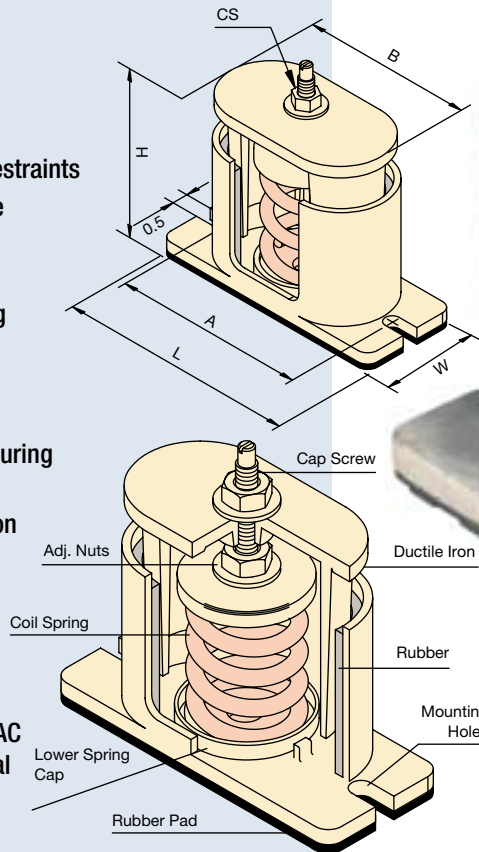
### Style MSC

#### Features:

- "C" Shaped Horizontal Restraints
- Non-Skid Bolt Down Base
- Isolates Low and High Frequency Vibration
- Rugged Cast Iron Housing
- 1-3" Deflection Springs Available
- Neoprene Sponge Prevents Metal Contact During Horizontal Loading
- Allows for Easy Installation and Inspection

#### Applications:

- Floor Mounted Pumps, Chillers, Compressors, Generators and Other HVAC Equipment with Horizontal Loads and/or Motion



TYPE	DIMENSIONS					
	L (inch)	W (inch)	A (inch)	B (inch)	H (inch)	CS (inch)
MSCM	8.27	3.39	7.28	5.87	7.28	M12
MSCN	8.27	3.39	7.28	5.87	7.28	M12
MSCS	5.91	2.56	5.12	4.09	5.12	M10

PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE	PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE
MSCS-0A	40	40	1.0	Yellow	MSCM-1-7	677	677	1.0	Red/Black
MSCS-0B	60	60	1.0	Green	MSCM-1-8	794	794	1.0	Blue/Black
MSCS-1	100	100	1.0	Red	MSCM-1-9	880	880	1.0	Brown
MSCS-1A	150	150	1.0	Blue	MSCM-1-10	1070	1070	1.0	Brown/Black
MSCS-2	200	200	1.0	Brown	MSCM-1-12	1262	1262	1.0	Gray
MSCS-3	260	260	1.0	Gray	MSCM-1-14	1452	1452	1.0	Gray/Black
MSCS-3A	330	330	1.0	White	MSCM-1-18	1875	1875	1.0	Khaki
MSCS-4	400	400	1.0	Orange	MSCM-1-22	2200	2200	1.0	Green
MSCS-5	550	500	1.0	Purple	MSCN-1-3	293	196	1.5	Blue
MSCS-8	750	750	1.0	Khaki	MSCN-1-4	411	274	1.5	Brown
					MSCN-1-6	578	386	1.5	Orange
MSCM-1-2	235	235	1.0	Yellow	MSCN-1-7	721	481	1.5	Gray
MSCM-1-3	296	296	1.0	White	MSCN-1-10	997	665	1.5	Red
MSCM-1-4	397	397	1.0	Green	MSCN-1-14	1358	905	1.5	Green
MSCM-1-5	487	487	1.0	Red	MSCN-1-16	1534	1023	1.5	Purple
MSCM-1-6	604	604	1.0	Blue	MSCN-1-22	2230	1486	1.5	Yellow



# SoundZorber®

## All Directional Restrained Spring Mounts

### Style MSR

#### Features:

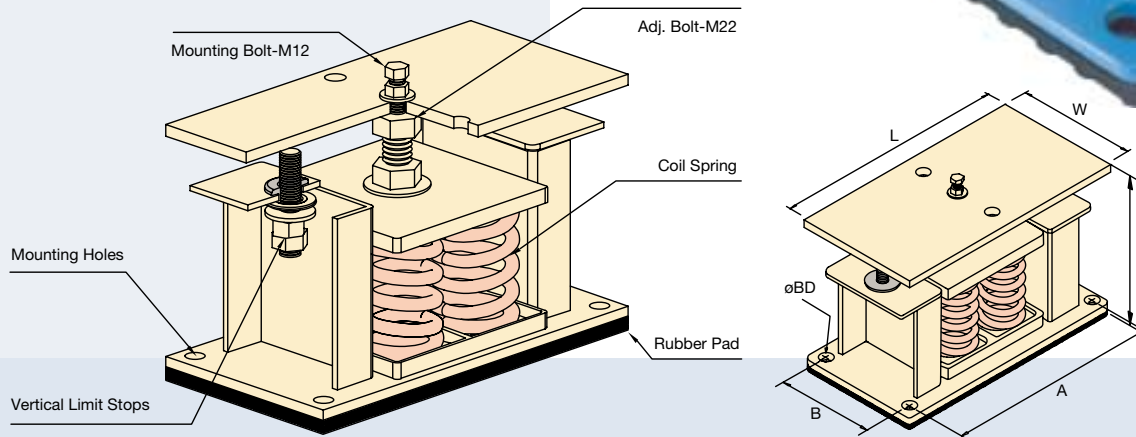
- All Directional Restraints
- Non-Skid Bolt Down Base
- Isolates Low and High Frequency Vibration
- Rugged Welded Steel Housing
- 1-3" Deflection Springs Available
- Neoprene Stoppers Prevent Metal Contact and Decelerate Impact Forces
- Allows for Easy Installation and Inspection

#### Applications:

- Floor Mounted Pumps, Chillers, Compressors, Generators, Cooling Towers and Other HVAC Equipment Having or Being Subjected to All Directional Loads and/or Motion

### Style MSR

#### All Directional Restrained Spring Mounts



TYPE	DIMENSIONS					
	L (inch)	W (inch)	A (inch)	B (inch)	H (inch)	BD (inch)
MSR-1	10.24	4.13	9.06	2.95	8.27	0.55
MSR-2	9.84	7.87	8.66	6.69	8.27	0.55
MSR-4	12.60	7.87	11.42	5.31	8.27	0.55
MSR-6	15.75	6.69	14.57	5.51	8.27	0.71
MSR-9	16.54	9.84	15.12	8.43	8.27	0.71
MSRC-1	10.24	4.13	9.06	2.95	8.27	0.55
MSRC-2	9.84	7.87	8.66	6.69	8.27	0.55
MSRC-4	12.60	7.87	11.42	5.31	8.27	0.55
MSRD-1	11.02	5.12	9.84	3.94	9.45	0.63
MSRD-2	11.02	8.66	9.84	7.48	9.45	0.63
MSRD-4	14.96	8.27	13.78	7.09	9.45	0.63
MSRS-1	15.75	7.87	13.78	6.30	12.40	0.71
MSRS-2	17.72	8.66	15.75	6.69	12.01	0.71
MSRS-4	17.72	17.72	15.75	15.75	12.01	0.71
MSRF-1	17.32	9.84	15.75	8.27	16.93	0.79
MSRH-1	17.32	9.84	15.75	8.27	18.11	0.79



# SoundZorber®

## All Directional Restrained Spring Mounts

PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE	PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE
MSR-1-2	235	235	1.0	Yellow	MSFC-1-3	293	196	1.5	Blue
MSR-1-3	296	296	1.0	White	MSFC-1-4	411	274	1.5	Brown
MSR-1-4	397	397	1.0	Green	MSFC-1-6	578	386	1.5	Orange
MSR-1-5	487	487	1.0	Red	MSFC-1-7	721	481	1.5	Gray
MSR-1-6	604	604	1.0	Blue	MSFC-1-10	997	665	1.5	Red
MSR-1-7	677	677	1.0	Red/Black	MSFC-1-14	1358	905	1.5	Green
MSR-1-8	794	794	1.0	Blue/Black	MSFC-1-16	1534	1023	1.5	Purple
MSR-1-9	880	880	1.0	Brown	MSFC-1-22	2230	1486	1.5	Yellow
MSR-1-10	1070	1070	1.0	Brown/Black	MSFC-2-27	2716	1811	1.5	Green
MSR-1-12	1262	1262	1.0	Gray	MSFC-2-30	3068	2045	1.5	Purple
MSR-1-14	1452	1452	1.0	Gray/Black	MSFC-2-44	4459	2973	1.5	Yellow
MSR-1-18	1875	1875	1.0	Khaki	MSFC-4-54	5432	3261	1.5	Green
MSR-1-22	2200	2200	1.0	Green	MSFC-4-60	6136	4090	1.5	Purple
MSR-2-26	2524	2524	1.0	Gray	MSFC-4-90	8918	5946	1.5	Yellow
MSR-2-30	2904	2904	1.0	Gray/Black					
MSR-2-38	3751	3751	1.0	Khaki	MSRD-1-2	224	112	2.0	Yellow
MSR-2-44	4400	4400	1.0	Green	MSRD-1-3	335	168	2.0	White
MSR-4-50	5047	5047	1.0	Gray	MSRD-1-5	559	279	2.0	Green
MSR-4-58	5769	5769	1.0	Gray/Black	MSRD-1-7	782	391	2.0	Red
MSR-4-76	7501	7501	1.0	Khaki	MSRD-1-9	894	447	2.0	White/Black
MSR-4-88	8800	8800	1.0	Green	MSRD-1-10	1006	503	2.0	Brown
MSR-6-120	11252	11252	1.0	Khaki	MSRD-1-12	1118	559	2.0	Green/Black
MSR-6-140	13200	13200	1.0	Green	MSRD-1-14	1341	671	2.0	Gray
MSR-9-160	16878	16878	1.0	Khaki	MSRD-1-16	1699	849	2.0	Khaki
MSR-9-200	19800	19800	1.0	Green	MSRD-1-19	1900	950	2.0	Gray/Black



# SoundZorber®

## All Directional Restrained Spring Mounts

### Style MSS

#### Features:

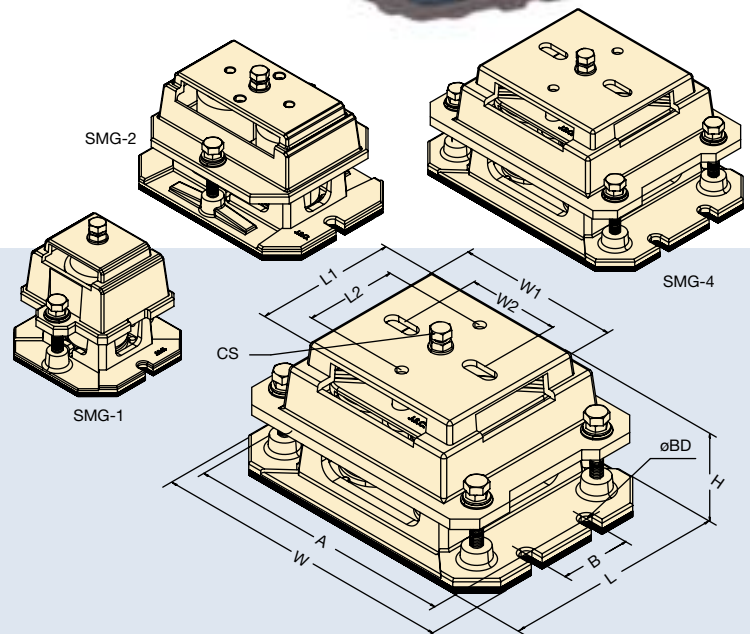
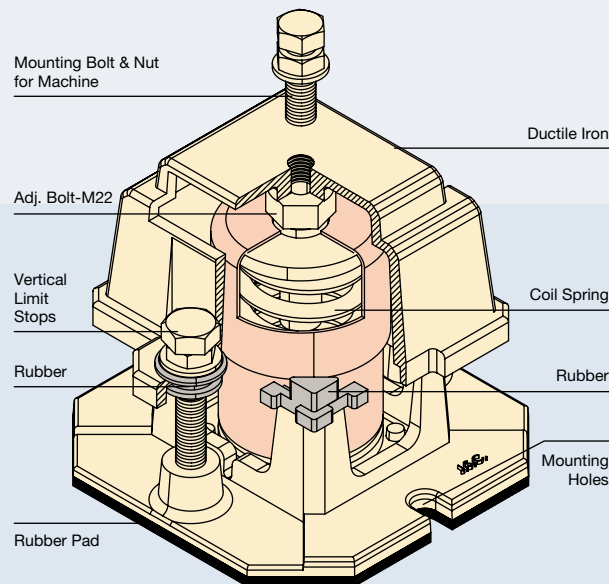
- All Directional Restraints, Ideal for Shock Loading
- Non-Skid Bolt Down Base
- Isolates Low and High Frequency Vibration
- Rugged Ductile Iron Housing
- 1-1/2" Deflection Spring Standard
- Neoprene Stoppers Prevent Metal Contact and Decelerate Impact Forces
- Allows for Easy Installation and Inspection

#### Applications:

- Floor Mounted Pumps, Chillers, Compressors, Generators, Cooling Towers and Other HVAC Equipment Having or Being Subjected to All Directional Loads and/or Motion
- Ideal for Seismic Design

### Style MSS

#### All Directional Restrained Spring Mounts



#### D I M E N S I O N S

TYPE	L (inch)	W (inch)	A (inch)	B (inch)	L1 (inch)	W1 (inch)	L2 (inch)	W2 (inch)	H (inch)	BD (inch)	CS (inch)
MSS-1	8.27	8.27	7.32	-	4.61	3.82	-	-	7.48	0.63	M12
MSS-2	9.45	12.99	10.63	-	4.21	8.94	3.15	5.12	7.48	0.79	M16
MSS-4	11.02	14.57	11.81	2.36	7.68	8.07	5.12	5.12	7.48	0.79	M20



# SoundZorber®

## All Directional Restrained Spring Mounts

PART NUMBER	LOAD RANGE (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE
MSS-1-1	84	56	1.5	Yellow
MSS-1-2	168	112	1.5	White
MSS-1-3	277	184	1.5	Green
MSS-1-3	319	212	1.5	Red
MSS-1-3A	360	240	1.5	Blue
MSS-1-4	419	279	1.5	Brown
MSS-1-6	570	380	1.5	Gray
MSS-1-7	712	475	1.5	White/Black
MSS-1-9	863	576	1.5	Green/Black
MSS-1-10	947	631	1.5	Khaki
MSS-1-11	1106	738	1.5	Gray/Black
MSS-1-14	1366	911	1.5	Dark Green
MSS-1-15	1492	995	1.5	Khaki/Black
MSS-1-16	1576	1051	1.5	Red
MSS-1-20	1911	1274	1.5	Green/Black
MSS-1-22	2121	1414	1.5	Red/Black
MSS-2-14	1425	950	1.5	White/Black
MSS-2-17	1727	1151	1.5	Green/Black
MSS-2-19	1894	1263	1.5	Khaki
MSS-2-22	2213	1475	1.5	Gray/Black
MSS-2-28	2733	1822	1.5	Dark Green
MSS-2-32	3152	2101	1.5	Khaki/Black
MSS-2-38	3822	2548	1.5	Green/Black
MSS-2-42	4241	2828	1.5	Red/Black
MSS-4-44	4426	2950	1.5	Gray/Black
MSS-4-54	5465	3643	1.5	Dark Green
MSS-4-64	6303	4202	1.5	Khaki/Black
MSS-4-76	7644	5096	1.5	Green/Black
MSS-4-84	8483	5655	1.5	Red/Black



# SoundZorber®

## Rubber Mounts

## Style MNR Rubber Mounts

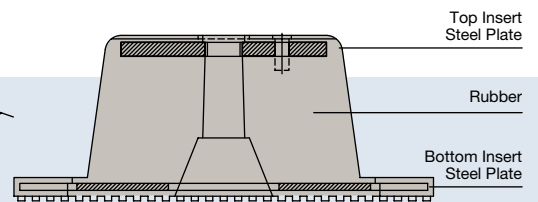
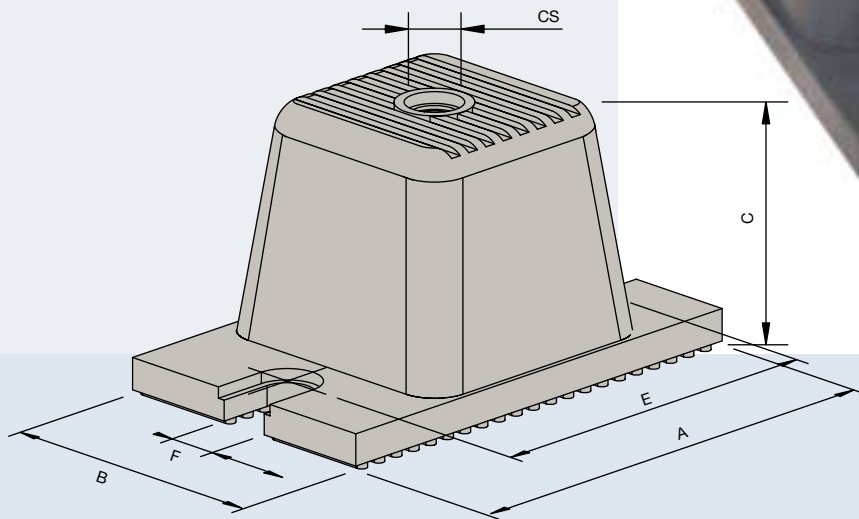
### Style MNR

#### Features:

- Most Economical Isolator
- Non-Skid Bolt Down Base
- Isolates High Frequency Vibration
- Rugged One Piece Molded Construction
- 0.1" or 0.2" Deflection Standard
- Quick and Easy Installation
- Leveling Bolt Standard

#### Applications:

- Floor Mounted HVAC or Industrial Equipment Having High Disturbing Frequencies



PART NUMBER	MAX. AXIAL STATIC LOAD RATING (lbs)	MAX. STATIC DEFLECTION (inch)	DIMENSIONS					
			A (inch)	B (inch)	C (inch)	F (inch)	E (inch)	CENTER THREAD CS
MNR-A-150L	150	0.10	3.74	2.09	1.10	0.39	3.0	M10
MNR-A-150H	150	0.20	3.74	2.09	1.81	0.39	3.0	M10
MNR-A-350L	350	0.10	3.74	2.09	1.10	0.39	3.0	M10
MNR-A-350H	350	0.20	3.74	2.09	1.81	0.39	3.0	M10
MNR-B-500L	500	0.10	5.00	3.03	1.57	0.55	4.0	M12
MNR-B-500H	500	0.20	5.00	3.03	2.76	0.55	4.0	M12
MNR-B-1000L	1000	0.10	5.00	3.03	1.57	0.55	4.0	M12
MNR-B-1000H	1000	0.20	5.00	3.03	2.76	0.55	4.0	M12
MNR-C-2000L	2000	0.10	7.09	4.65	1.57	0.55	5.88	M16
MNR-C-2000H	2000	0.20	7.09	4.65	2.76	0.55	5.88	M16
MNR-C-4000L	4000	0.10	7.09	4.65	1.57	0.55	5.88	M16
MNR-C-4000H	4000	0.20	7.09	4.65	2.76	0.55	5.88	M16



# SoundZorber®

## Rubber Ring Mounts

### Style MRR

#### Rubber Ring Mounts

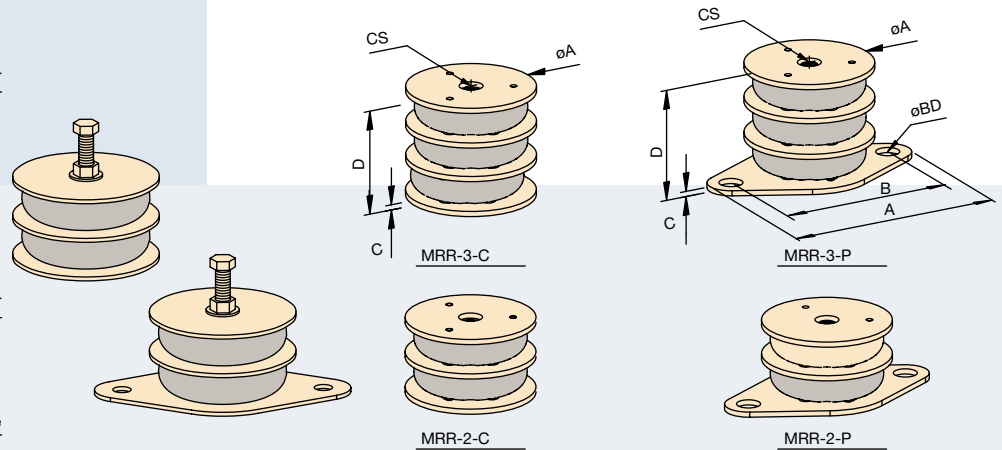
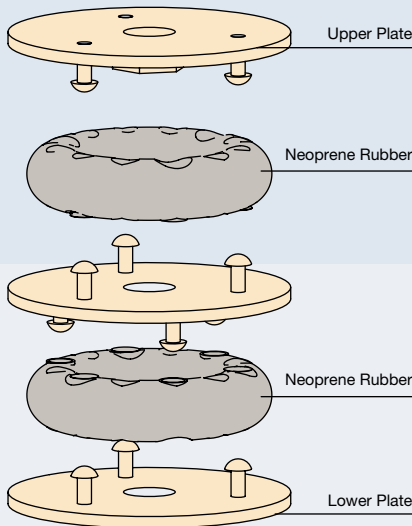
### Style MRR

#### Features:

- Multiple-Layer Configuration, for Varying Deflection Requirements
- Isolates High Frequency Vibration
- Rugged and Simple Construction
- Low Cost and Easy to Install
- Leveling Bolt Standard

#### Applications:

- Floor Mounted Equipment Including Pumps, Blowers, Compressors, Measuring Instruments and Transformers, as well as Gymnasiums or Other Floating Floors, Walls and Ceilings



PART NUMBER	MAX. AXIAL STATIC LOAD RATING (lbs)	DIMENSIONS				BOLT OR NUT SIZE	CS	STATIC DEFLECTION (inch)	NATURAL FREQUENCY (Hz)
		A (inch)	BD (inch)	C (inch)	D (inch)				
MRR-2-2	200	2.36	0.43	0.12	1.38	5/16	M8	0.43	7.5
MRR-3-2	200	2.36	0.43	0.12	2.01	5/16	M8	0.59	6.2
MRR-2-4	400	3.15	0.51	0.12	1.85	3/8	M10	0.55	6.4
MRR-3-4	400	3.15	0.51	0.12	2.68	3/8	M10	0.79	5.4
MRR-2-8	800	4.72	0.59	0.12	2.64	1/2	M12	0.79	5.2
MRR-3-8	800	4.72	0.59	0.12	3.86	1/2	M12	1.18	4.4
MRR-2-16	1600	6.30	0.75	0.20	3.39	5/8	M16	1.06	4.6
MRR-3-16	1600	6.30	0.75	0.20	4.96	5/8	M16	1.61	3.8

Notes:

1.) The "-2" or "-3" after "MRR" in the part number indicates the number of layers. Configurations with nuts or bolts are specified by a "N" or "B" respectively.



# SoundZorber®

## Air Springs

### Style MAR

#### Air Springs

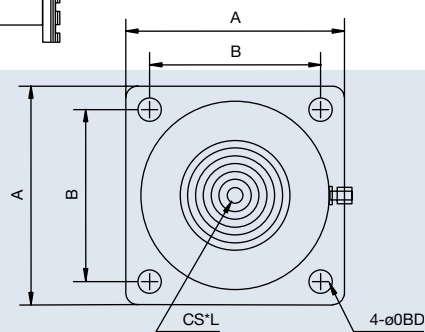
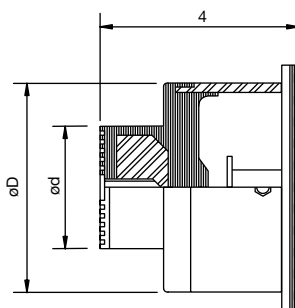
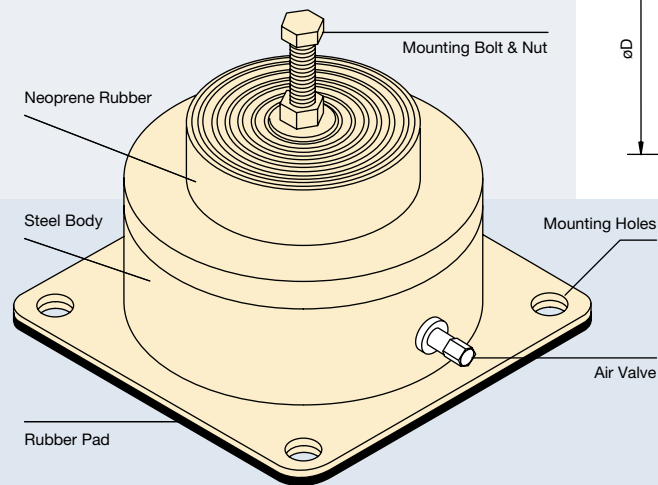
## Style MAR

### Features:

- Lowest Natural Frequency of Support, Provides the Highest Range of Frequencies Isolated
- Rugged Welded Steel and Molded Rubber Construction
- Non-Skid Bolt Down Base

### Applications:

- Ideal for Sensitive Measuring Equipment and Other HVAC Equipment Located in Sensitive Building Locations



TYPE	LOAD RANGE		DIMENSIONS										CENTER BOLTS CS*L
	(lbs)	(kgs)	A (inch)	B (inch)	D (inch)	d (inch)	BD (inch)	A (mm)	B (mm)	D (mm)	d (mm)	BD (mm)	
MAR-2	100-200	50-100	4.92	3.94	3.94	1.97	0.47	125	100	100	50	12	M10-40L
MAR-4	200-400	100-200	4.92	3.94	3.94	2.36	0.47	125	100	100	60	12	M12-50L
MAR-8	400-800	200-400	6.30	4.92	5.43	3.54	0.47	160	125	138	90	12	M12-50L
MAR-15	800-1500	400-750	7.87	6.30	6.46	4.33	0.47	200	160	164	110	12	M12-50L
MAR-25	1400-2500	700-1250	9.84	7.87	8.35	5.91	0.55	250	200	212	150	14	M16-60L
MAR-45	2400-4500	1200-2250	13.78	11.81	12.36	9.45	0.55	350	300	314	240	14	M16-60L
MAR-75	4000-7500	2000-3500	19.69	17.72	16.22	12.99	0.63	500	450	412	330	16	M16-60L



# SoundZorber®

## Spring Hangers

### Style HSR

#### Spring Hangers

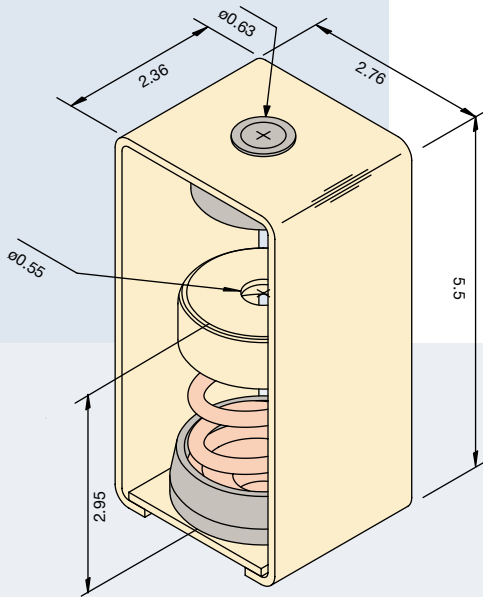
### Style HSR

#### Features:

- Rugged Welded Steel Housing
- Isolates Low and High Frequency Vibration
- External Deflection Scale Standard
- Allows for Easy Installation and Inspection

#### Applications:

- Suspended Piping, Ducting, Fans, Air Handling Units, Ceilings and Other HVAC Equipment



PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE
HSR-0A	40	40	1.0	Yellow
HSR-0B	60	60	1.0	Green
HSR-1	100	100	1.0	Red
HSR-1A	150	150	1.0	Blue
HSR-2	200	200	1.0	Brown
HSR-3	260	260	1.0	Gray
HSR-3A	330	330	1.0	White



# SoundZorber®

## Spring Hangers

### Style HSM

#### Spring Hangers

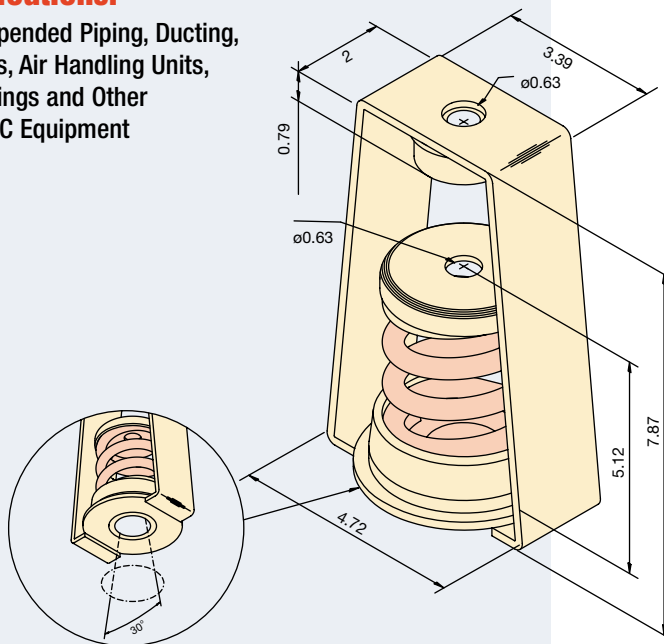
### Style HSM

#### Features:

- 30° Allowable Rod Misalignment
- Rugged Welded Steel Housing
- Isolates Low and High Frequency Vibration
- External Deflection Scale Standard
- Allows for Easy Installation and Inspection

#### Applications:

- Suspended Piping, Ducting, Fans, Air Handling Units, Ceilings and Other HVAC Equipment



PART NUMBER	RATED CAPACITY (lbs)	SPRING RATE (lbs/inch)	RATED DEFL. (inch)	COLOR CODE
HSM-1-2	235	235	1.0	Yellow
HSM-1-3	296	296	1.0	White
HSM-1-4	397	397	1.0	Green
HSM-1-5	487	487	1.0	Red
HSM-1-6	604	604	1.0	Blue
HSM-1-7	677	677	1.0	Red/Black
HSM-1-8	794	794	1.0	Blue/Black
HSM-1-9	880	880	1.0	Brown
HSM-1-10	1070	1070	1.0	Brown/Black
HSM-1-12	1262	1262	1.0	Gray
HSM-1-14	1452	1452	1.0	Gray/Black
HSM-1-18	1875	1875	1.0	Khaki
HSM-1-22	2200	2200	1.0	Green
HSMC-3	293	196	1.5	Blue
HSMC-4	411	274	1.5	Brown
HSMC-6	578	386	1.5	Orange
HSMC-7	721	481	1.5	Gray
HSMC-10	997	665	1.5	Red
HSMC-14	1358	905	1.5	Green
HSMC-16	1534	1023	1.5	Purple
HSMC-22	2230	1486	1.5	Yellow

# SoundZorber®

## Pump Bases

### Style BCB

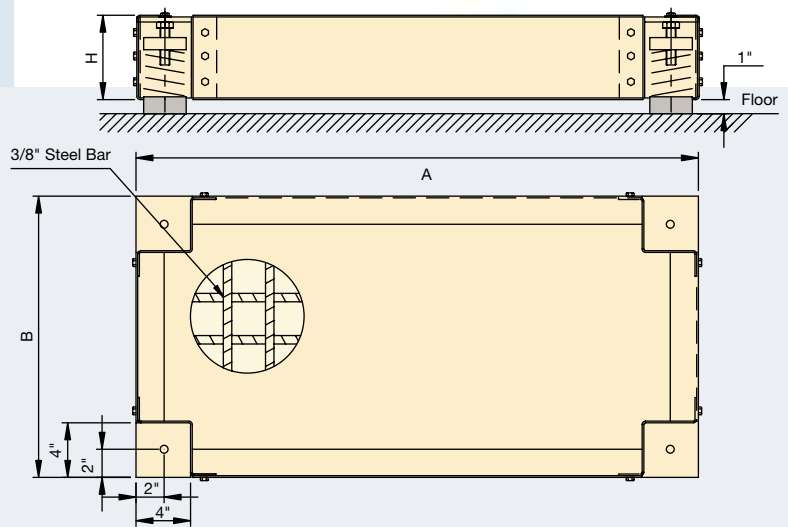
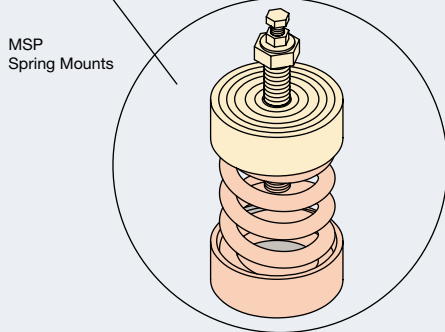
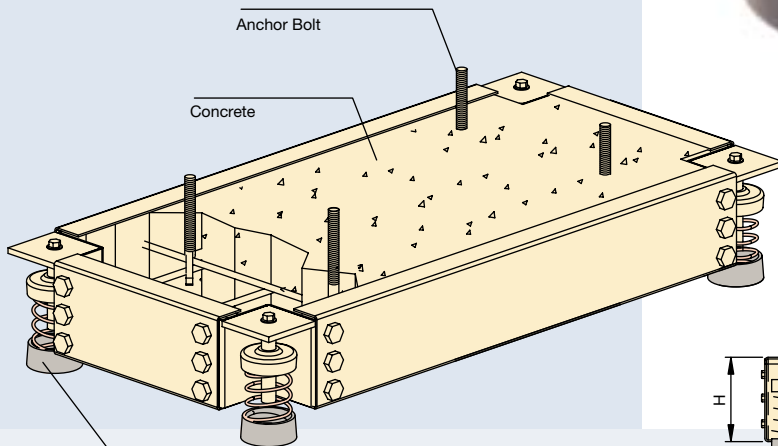
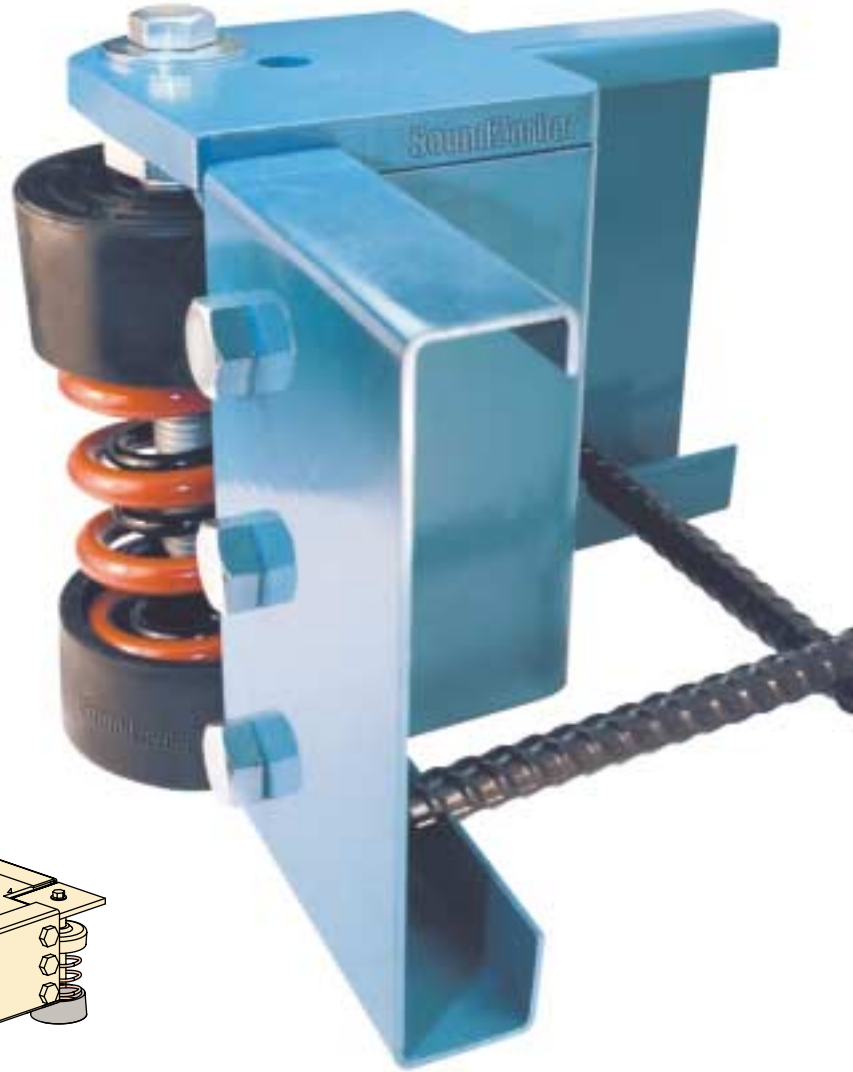
#### Features:

- Bolted Modular Construction Minimizes On-Site Labor
- Adds Mass and Stiffness to Equipment Supports
- Simple to Install, Just Add Concrete
- Isolates Low and High Frequency Vibration
- Lowers Vibration Oscillation, Caused by Equipment with High Unbalanced Forces

#### Applications:

- Rigid Structural Support for Pumps and Other HVAC Equipment

### Style BCB Pump Bases



TYPE	DIMENSIONS									
A&B (inch)	18	24	30	36	42	48	54	60	66	72
H (inch)	6	6	6	6	6	6	6	6	6	6



# SoundZorber®

## Bolted Steel Beam Bases

### Style BBB

Bolted Steel Beam Bases

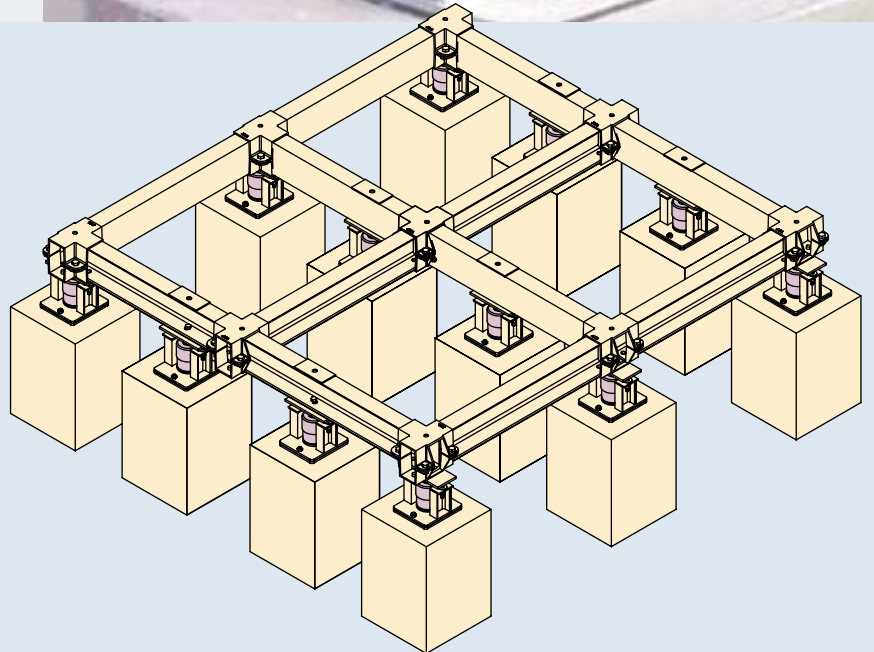
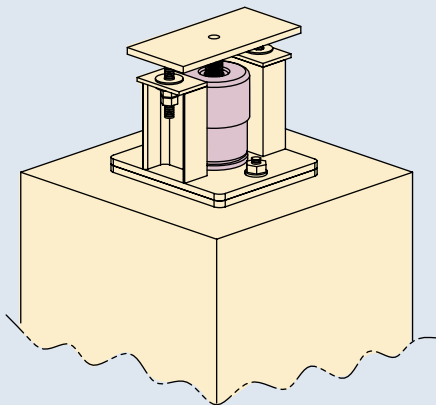
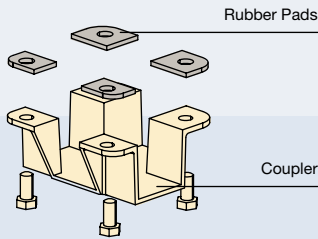
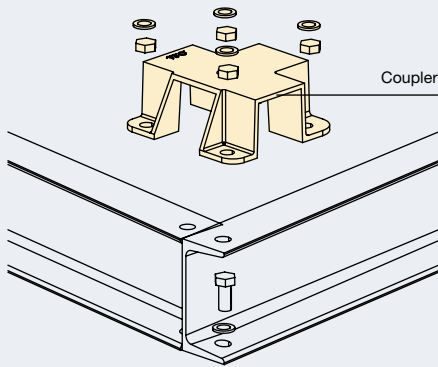
### Style BBB

#### Features:

- Bolted Modular Construction, Minimizes On-Site Labor
- Adds Stiffness to Equipment Supports
- Simple to Install, No Field Welding
- Can Be Used with Any SoundZorber Mount

#### Applications:

- Ideal for Roof Mounted Equipment, Including Cooling Towers, Air Handling Units and More



# SoundZorber®

## Seismic Cables & Snubber Restraints

### Style SCR

#### Features:

- Galvanized Aircraft Cable Attached to Angle Support Brackets
- 1/8", 1/4" or 3/8" Diameters for 680 lbs, 2400 lbs, or 4200 lbs Load Respectively
- Field Adjustable Lengths

#### Applications:

- Ideal Way to Restrain Suspended Equipment, Piping, and Ducting from Seismic Events

### Style SSR

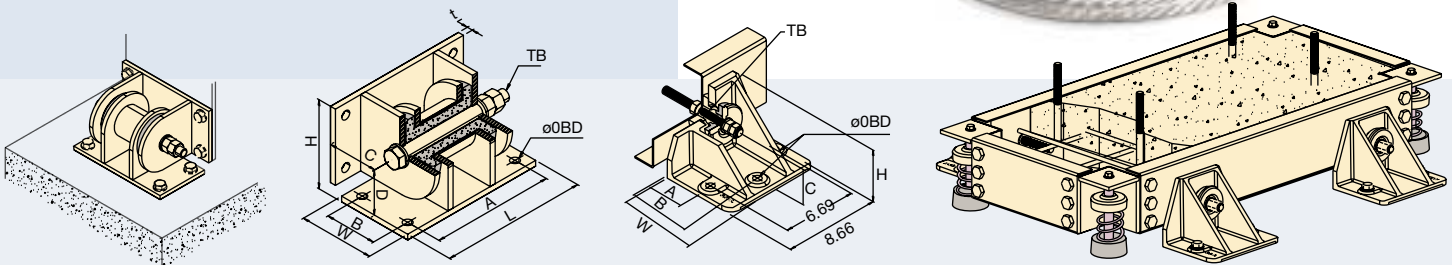
#### Seismic Snubber Restraints

#### Features:

- All Directional Restraints
- Rugged Welded Steel or Ductile Iron Housing
- Neoprene Stopper Prevents Metal Contact and Decelerates Impact Forces

#### Applications:

- Snubbers Are Used to Add All Directional Restraint to Bases Equipped with Free Standing Spring Mounts



TYPE	1G ALL DIRECTIONAL LOAD RATINGS	DIMENSIONS						CENTER BOLT TB
		W (inch)	H (inch)	øBD (inch)	A (inch)	B (inch)	C (inch)	
<b>SSR-500-1000 All Directional Seismic Snubbers</b>								
SSR-500	500 (lbs)	6.69	6.30	0.71	3.54	—	3.54	5/8"
SSR-1000	1000 (lbs)	7.87	7.68	0.71	3.54	6.50	4.72	3/4"

TYPE	1G ALL DIRECTIONAL LOAD RATINGS	DIMENSIONS									
		L (inch)	W (inch)	A (inch)	B (inch)	C (inch)	D (inch)	øBD (inch)	H (inch)	TB	t (inch)
<b>SSR-1500-5000 All Directional Seismic Snubbers</b>											
SSR-1500	1500 (lbs)	12.20	6.30	10.24	4.33	4.21	4.21	0.75	7.36	M24	0.47
SSR-5000	5000 (lbs)	13.78	7.48	11.42	5.12	5.28	5.28	0.98	9.02	M30	0.75



# SoundZorber®

## Molded Spherical Expansion Joints

### Style 1010, 1020 & 1030

#### Features:

- Superior Noise and Vibration Control
- Most Economical Flexible Connector
- Precision Molded Spherical Flowing Arch Design
- Multiple Plies of Tire Cord Reinforcement and a Wide Variety of Tube and Cover Elastomers
- Solid Galvanized Steel Floating Flanges Avoids the Problematic Hooked or Interlocking Split Flange Design
- High Tensile Aircraft Cable is Embedded in the Raised Face Rubber Ends to Prevent Pull Out and Avoids the Sharp Cutting Edge of Solid Steel Rings
- Safe Industry Standard Proven Design Utilizing the same Beaded Cable Technology Established in the Tire Industry
- No Gaskets Required; ANSI 150 lb. Drilling Standard, other Flange Drilling Available, Including ANSI 300 lb., DIN, PN, JIS and API
- Compensates for Minor Misalignment and Offset while Providing Easy Access to Piping and Equipment
- Large Inventory Means Quick Shipments



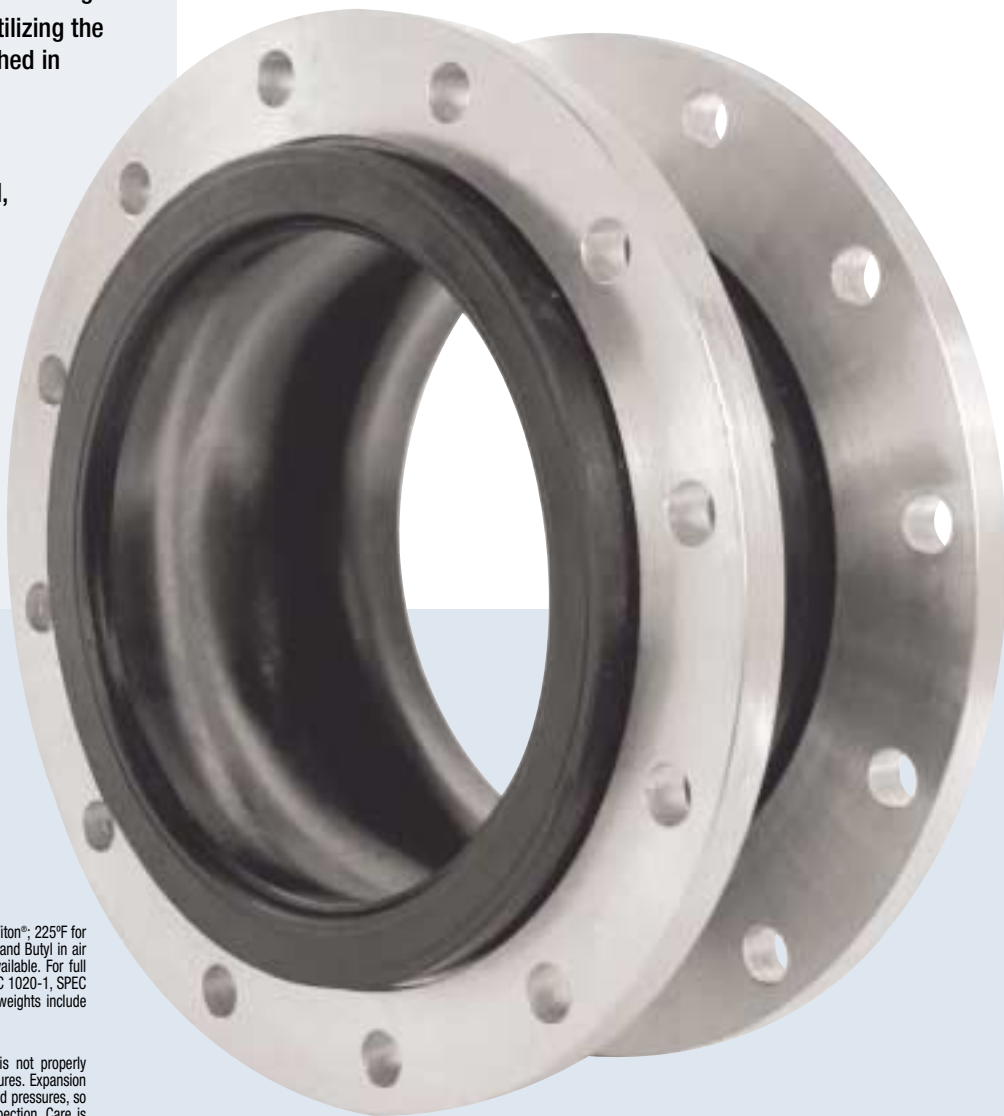
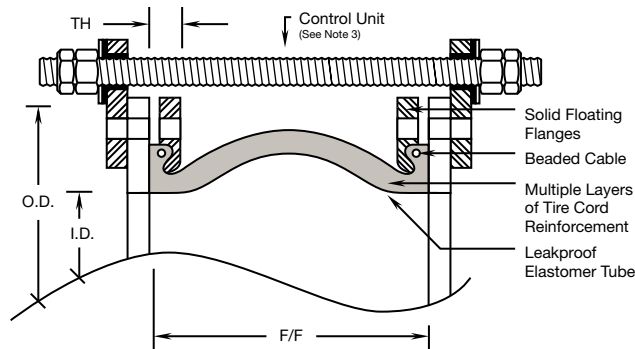
For a complete line of Expansion Joints solutions, see General Rubber's Maxi Joint Technical Guideline Catalog.

#### Notes:

- 1.) Maximum operating temperature of 250°F for EPDM, Butyl, Hypalon®, and Viton®; 225°F for Neoprene; 210°F for Nitrile; 180°F for Pure Gum Rubber; 300°F for EPDM and Butyl in air service at 25 PSI maximum; higher pressure and temperature ratings available. For full product specifications and installation instructions, see SPEC 1010-1, SPEC 1020-1, SPEC 1030-1 and ININ 1010-1, ININ 1020-1, ININ 1030-1 respectively. Gross weights include flanges or union ends.
- 2.) For drilling information see 125/150 lb.
- 3.) **WARNING:** Control units (sold separately) must be used when piping is not properly anchored. Number of rods are dependent upon maximum field test pressures. Expansion joints may operate in pipelines carrying fluids at elevated temperatures and pressures, so precaution should be taken to ensure proper installation and regular inspection. Care is required to protect personnel in the event of leakage or splash. Adequate floor drains are always recommended.
- 4.) Movements are non-concurrent. Contact General Rubber for concurrent movements, and for sizes not shown up to 144" I.D.

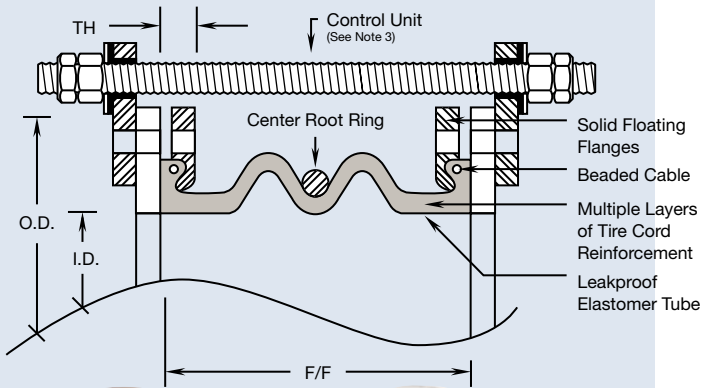
### Style 1010

#### Single Sphere with Floating Flanges



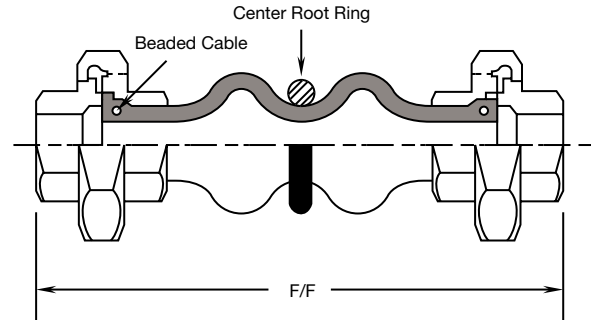
# Style 1020

## Double Sphere with Floating Flanges



# Style 1030

## Double Sphere with Union Ends



SIZE I.D. (inch)	LENGTH F/F (inch)	FLANGE TH (inch)	MOVEMENTS					MAX Pressure (PSIG)	VACUUM Rating (inch Hg)	GROSS Weight (lbs)
			Comp. (inch)	Ext. (inch)	Lateral (inch)	Angular (degree)	Torsional (degree)			
<b>1010 Single Sphere with Floating Flanges</b>										
2	6	7/8	5/8	3/8	3/8	22	3.1	225	30	8.8
2-1/2	6	15/16	5/8	3/8	3/8	17	3.0	225	30	12.5
3	6	1	7/8	1/2	1/2	19	2.9	225	30	14
4	6	1	7/8	1/2	1/2	14	2.7	225	30	18
5	6	1-3/16	7/8	1/2	1/2	12	2.6	225	30	22.5
6	6	1-5/16	7/8	1/2	1/2	11.5	2.4	225	30	26.8
8	6	1-5/16	1-1/4	3/4	3/4	11	2.2	225	30	37.8
10	8	1-5/16	1-1/4	3/4	3/4	9	2.1	225	30	55.5
12	8	1-5/16	1-1/4	3/4	3/4	7	2.0	225	20	83
14	8	1-9/16	1-1/4	3/4	3/4	6	1.8	150	20	111
16	8	1-11/16	1-1/4	3/4	3/4	5.5	1.4	125	20	145
18	8	1-3/4	1-1/4	3/4	3/4	5	1.0	125	15	153
20	8	1-3/4	1-1/4	3/4	3/4	4.3	0.8	125	15	178
24	10	2	1-1/2	3/4	1	3.6	0.7	110	15	255
<b>1020 Double Sphere with Floating Flanges</b>										
2	7	7/8	2	1-1/8	1-1/4	68	9.5	225	30	9
2-1/2	7	15/16	2	1-1/8	1-1/4	53	7.5	225	30	13.5
3	7	1	2	1-1/8	1-1/4	44	6.2	225	30	14.5
4	9	1	2-1/2	1-3/8	1-3/4	40	5.6	225	30	20.5
5	9	1-3/16	2-1/2	1-3/8	1-3/4	32	4.5	225	30	25
6	9	1-5/16	2-1/2	1-3/8	1-3/4	26	3.6	225	30	30
8	13	1-5/16	2-1/2	1-3/8	1-3/4	20	2.8	225	30	44
10	13	1-5/16	2-1/2	1-3/8	1-3/4	16	2.2	225	15	66
12	13	1-5/16	2-1/2	1-3/8	1-3/4	13	1.8	225	15	95.5
14	13-3/4	1-9/16	2-1/2	1-3/8	1-3/4	12	1.7	150	15	113
<b>1030 Double Sphere with Union Ends</b>										
3/4	8	N/A	7/8	1/4	7/8	32	4.8	150	30	2.5
1	8	N/A	7/8	1/4	7/8	25	3.7	150	30	3
1-1/4	8	N/A	7/8	1/4	7/8	20	3	150	30	4
1-1/2	8	N/A	7/8	1/4	7/8	17	2.5	150	30	5
2	8	N/A	7/8	1/4	7/8	13	2	150	30	7.5





*The information presented in this catalog is provided in good faith. General Rubber Corp. reserves the right to modify or improve its design specifications without notice and does not imply any guarantee or warranty for any of its products from reliance upon the information contained herein. For specific application recommendations, consult General Rubber Corp. Failure to properly select products could result in property damage and/or serious personal injury. All orders are subject to final acceptance by General Rubber Corp.*



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