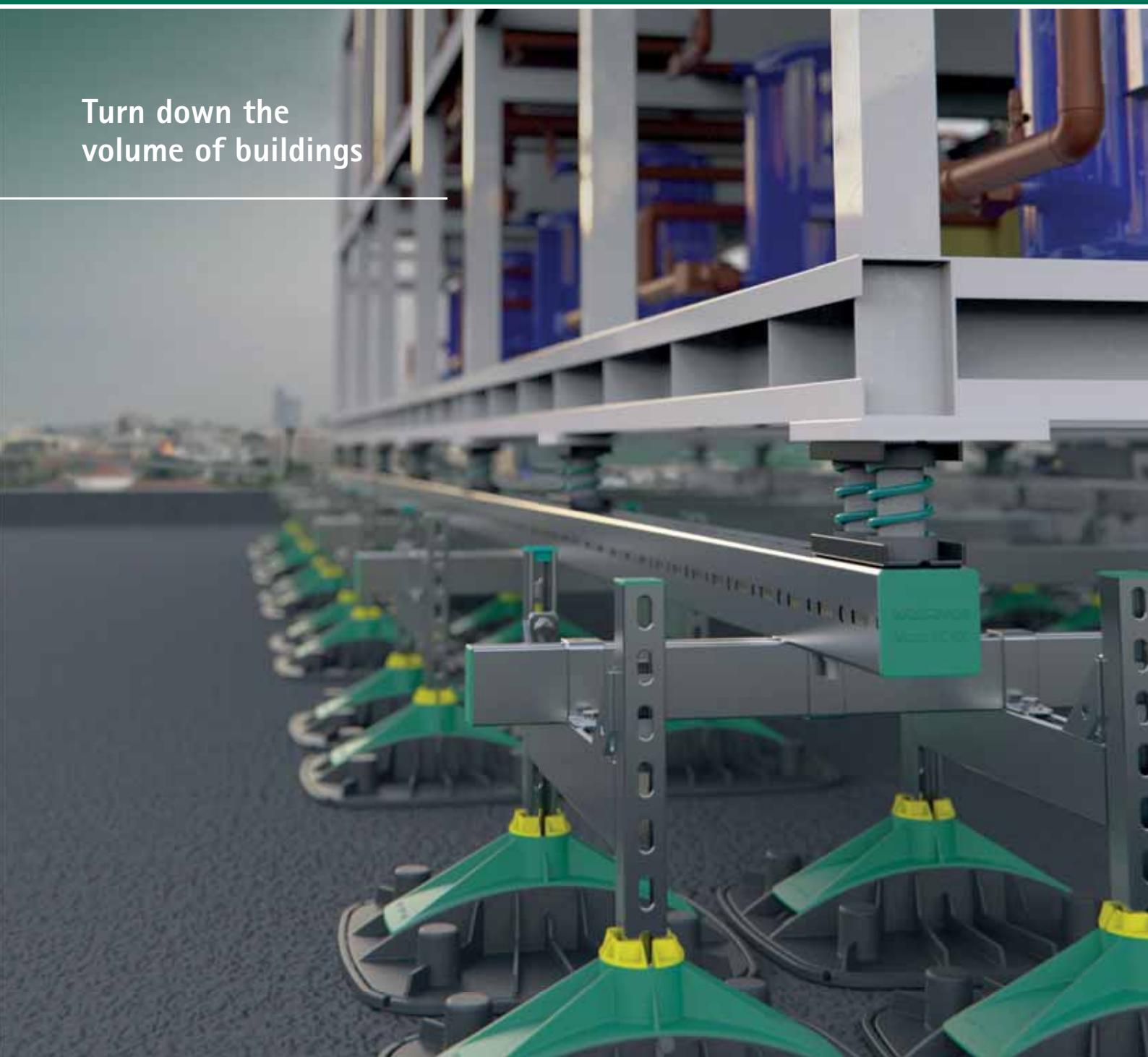


# walraven

Turn down the  
volume of buildings



## Walraven VibraTek®

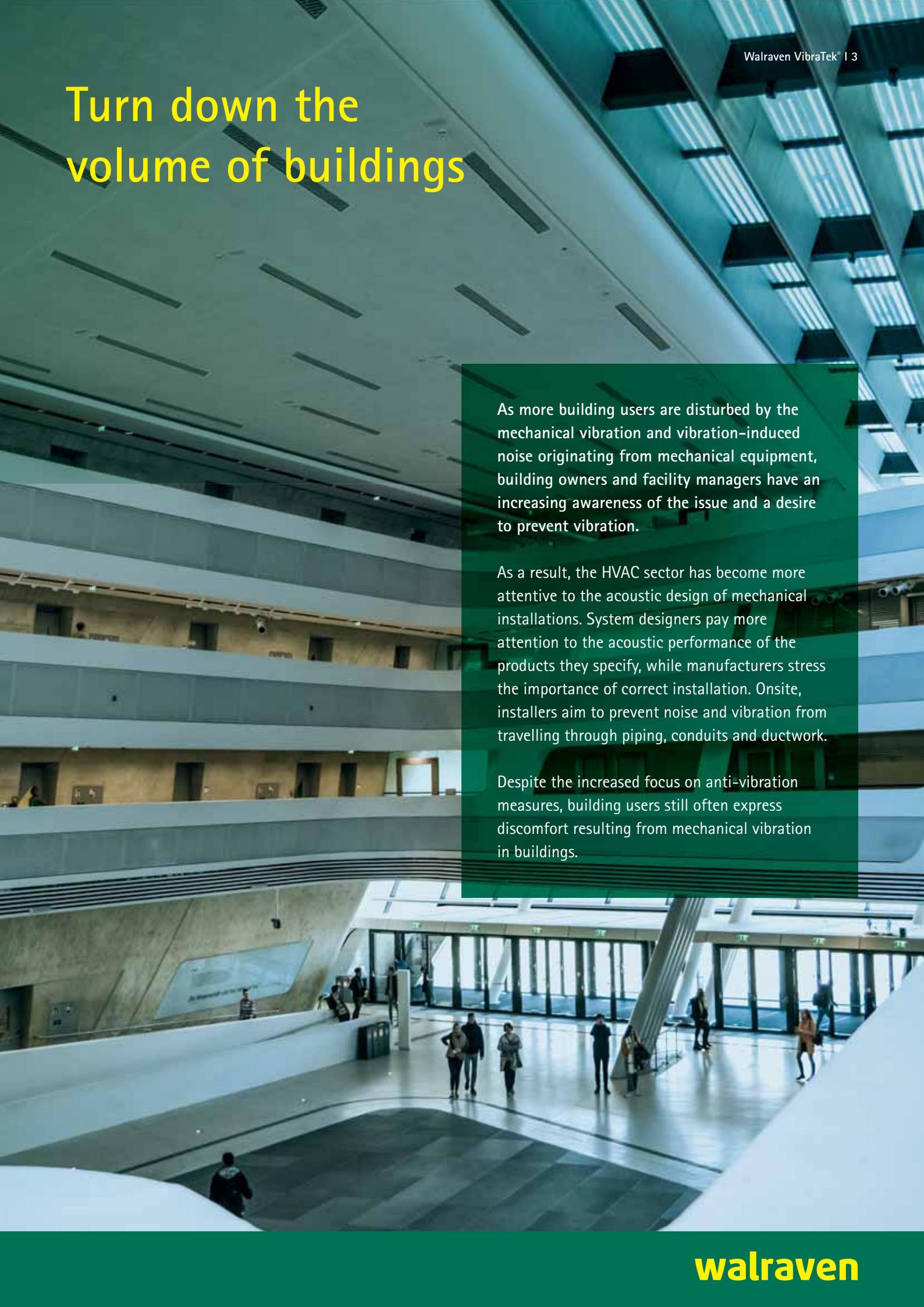
Vibration isolators for equipment and systems in buildings

## Inspired by smart solutions from the start

Walraven was established in 1942. Our founder, the great-grandfather of our current CEO, was an inventor with a love for simple and smart solutions. And now, more than 75 years later, we are a globally active company in the installation industry, committed to develop simple, yet smart product systems. With our wide product range and expert advice, we can provide complete solutions for any project, no matter how large or complex.

**Walraven. The value of smart**

# Turn down the volume of buildings



As more building users are disturbed by the mechanical vibration and vibration-induced noise originating from mechanical equipment, building owners and facility managers have an increasing awareness of the issue and a desire to prevent vibration.

As a result, the HVAC sector has become more attentive to the acoustic design of mechanical installations. System designers pay more attention to the acoustic performance of the products they specify, while manufacturers stress the importance of correct installation. Onsite, installers aim to prevent noise and vibration from travelling through piping, conduits and ductwork.

Despite the increased focus on anti-vibration measures, building users still often express discomfort resulting from mechanical vibration in buildings.



# What is vibration?

In its simplest form, vibration is a mechanical phenomenon where oscillations occur about an equilibrium point. Vibration can be desirable, for example, in the case of a motion of a guitar's string or in the movement of a loudspeaker's membrane. In many cases, however, vibration is undesirable, wasting energy and creating unwanted noise. Typical examples of unwanted vibration include the vibrational motion of engines, or other mechanical devices and equipment in operation.

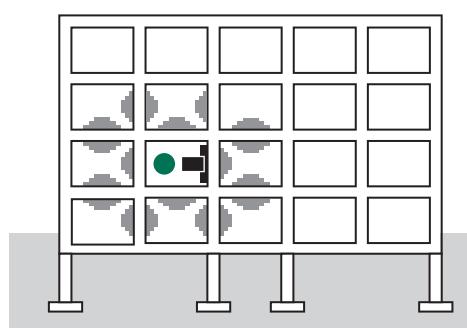
## What are the most common sources of vibration in buildings?

HVAC equipment that is rigidly attached to a slab, wall, or ceiling can transmit vibration into the supporting structure and cause highly undesirable levels of structure-borne noise. This noise can travel far and can be heard throughout the building. Just like equipment, piping, conduits, and ductwork can act as transmitters of structure-borne noise if they are rigidly connected to vibrating equipment.

## What are the consequences of vibration?

**Unresolved vibration can cause problems affecting both the building and its users. These effects include, for example:**

- creating discomfort for people
- safety issues for those near the vibrating equipment
- damage to the structure of the building
- increased maintenance requirements of equipment
- decreased lifetime of equipment
- incorrect operation of equipment
- violation of regulatory requirements



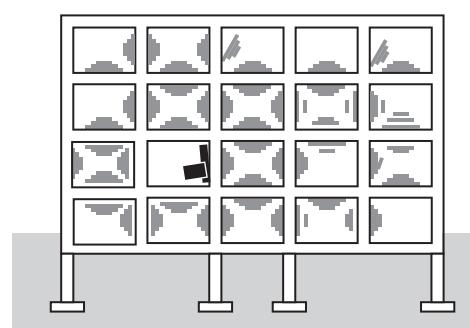
Transmission of airborne noise in a building

## How to resolve vibration?

Isolating the source of vibration from the supporting structure is typically the most efficient approach to eliminate vibration. Carefully selected vibroacoustic isolators need to be placed, where possible, directly in between the mounting structure and the equipment that produces unwanted vibration. The isolators can then effectively absorb up to 99% of excess vibration produced by the equipment.

It is worth noting that correcting a noise or vibration problem in the future can be more difficult and costly than tackling it at the time of installation. The cost of correction can include the time required to coordinate the investigation, direct payments to the retrofitting contractor and possible compensation paid to the building users filing complaints. Therefore, it is always advisable to prevent any vibration issues occurring in the first place. The negligible extra cost for prevention (usually about 1% to 2% of the total HVAC system cost) is money well spent compared to the second-best alternative, which is correcting a problematic situation.

Isolating vibrating equipment from structural building components, such as slabs, walls, and ceilings, is essential for controlling vibration and structure-borne noise transmission. There are many types of isolators available for HVAC equipment, and the most effective selection for each piece of equipment should be considered.



Transmission of structure-borne noise in a building

# What information... is required to select the right isolator?

Below are some of the key factors that influence the selection of the isolator:

## ■ Equipment specifications

Different types of HVAC equipment will require different solutions. You need to consider the size and weight of the equipment or pipework and its structural attachment points.

## ■ Location of equipment

The location and support surface of the equipment can affect which types of isolator are required. For example, is it ceiling mounted, floor mounted on a slab in a basement, or is it outdoors on a building rooftop?

## ■ Vibration excitation of the equipment

The rotational frequency (revolutions per second) of the machinery contribute to the levels of vibration. The forces and couples generated will influence the isolators required to dampen the vibrations.

## ■ Type of building

Different types of building can have different requirements for vibration and acoustic isolation. For example an entertainment venue, industrial facility or luxury apartment block may have more significant requirements or expectations than some other buildings.

## ■ Environmental considerations

Whether the equipment is placed indoors or outdoors can make a big difference, but under all circumstances, you need to consider environmental factors such as the degree of corrosivity and the minimum and maximum ambient temperature near the machinery.

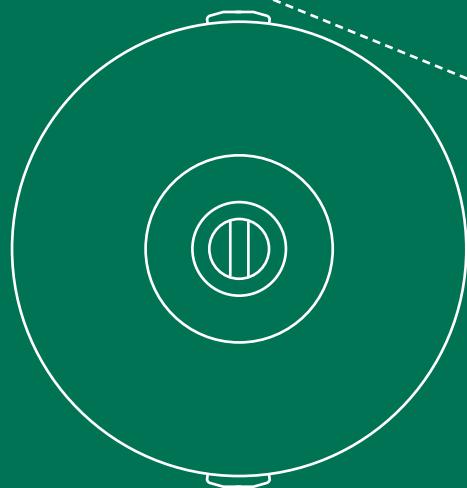
## ■ Special requirements

Last but not least, you need to check if there are any special requirements. For example, are there electrical, pipework or ducting connections that might modify the mechanical response of the mounting system. Are there any externally applied forces or moments; minimum or maximum clearance requirements between equipment and foundation; alignment requirements; or dynamic loads.

*Isolated pipelines  
prevent vibration and  
noise transmission  
to the structure of  
a building*



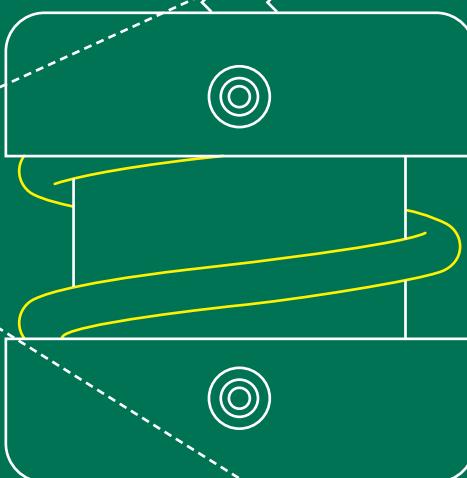
Wide range of isolators



+ High performance



+ Made in EU

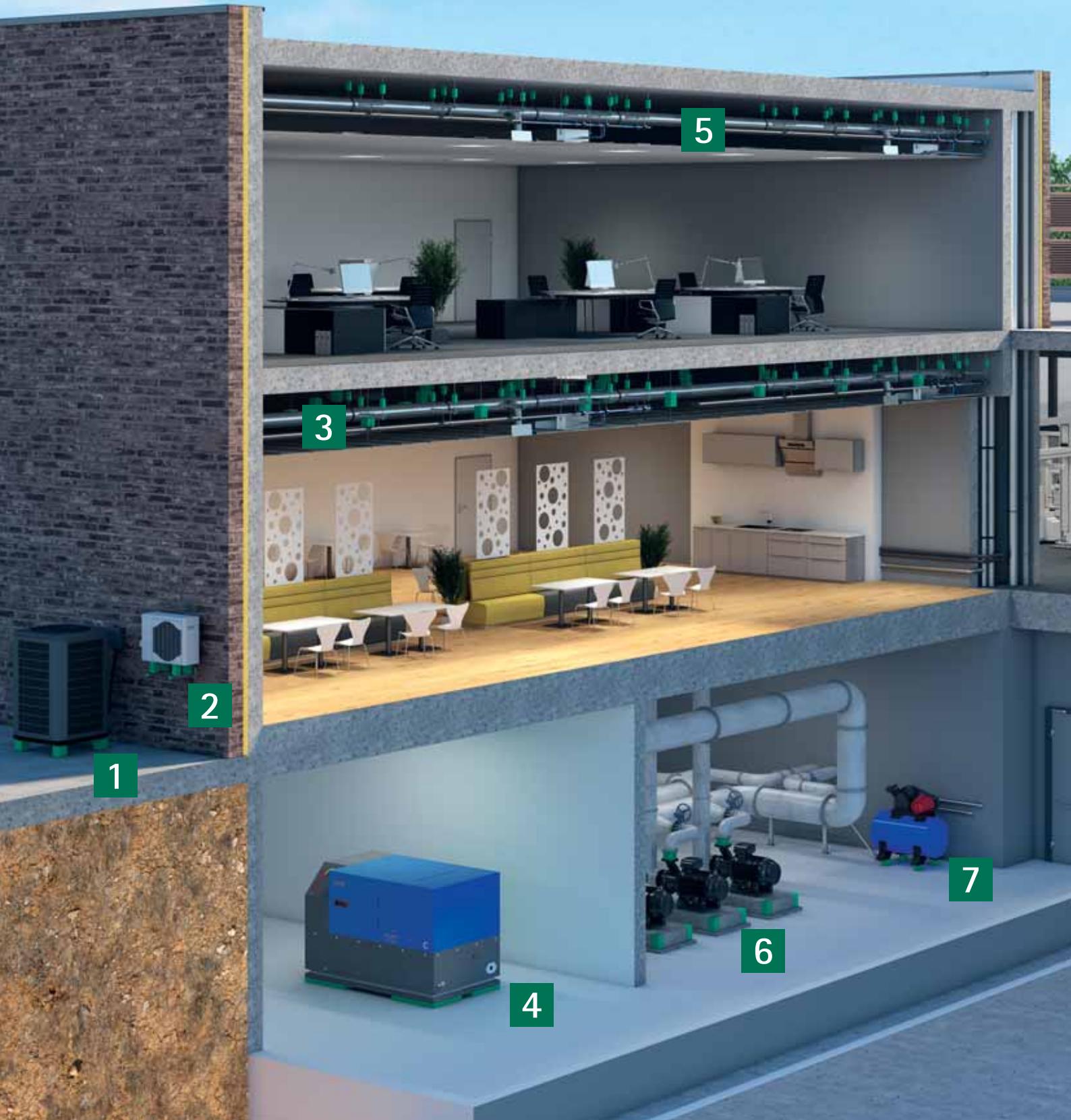


+ Wide range of applications

+ Digital product data & BIM Models

# Typical applications

Where can Walraven VibraTek® products be used?





### Walraven VibraTek® – Typical applications

- 1 Heat pumps
- 2 Outside AC splits
- 3 Acoustic ceilings
- 4 Backup power generators and cogeneration plants
- 5 Suspended piping systems
- 6 Pumps
- 7 Compressors
- 8 Ventilation ducts
- 9 Rooftop chillers, refrigeration and air handling units
- 10 Inline fans and equipment
- 11 Industrial processing machinery

# How to evaluate the suitability of an isolator?

Part No.	Applied load (N)	Deflection (mm)	Damping efficiency upon disturbing vibration (%)									41.7
			rpm	500	800	1000	1200	1500	2000	2500		
			Hz	8.3	13.3	16.7	20.0	25.0	33.3			
2800101000	500	51	2.0			19	55	75	87	92		
	600	61	2.4			40	65	80	90	94		
	800	82	3.2		22	61	76	86	92	95		
	1000	102	4.0		46	71	82	89	94	96		
2800103000	1250	127	1.7				40	69	84	91		
	1500	153	2.0			19	55	75	87	92		
	1750	178	2.3			37	64	79	89	93		
	3000	306	4.0			71	82	89	94	96		
	3250	331	2.6			47	68	82	91	94		
2800105000	3500	357	2.8			53	71	83	91	95		
	3750	382	3.0		12	57	74	85	92	95		
	5000	510	4.0		46	71	82	89	94	96		
	5500	561	2.8			52	71	83	91	94		
2800108000	6000	612	3.0		12	57	74	85	92	95		
	7000	714	3.5		33	66	78	87	93	96		
	8000	815	4.0		46	71	82	89	94	96		

## How to read the table:

Example: the load per one vibro-isolator is 280 kg, the operating frequency of the device is 2300 rpm. See the 5 steps to read from the table (as shown in the attached diagram) to find out if the selected vibro-isolator meets the damping conditions and is well-matched.

The motor's speed (rpm) causes vibrations (Hz) in HVAC devices. To simplify product selection, we've organized tables by speed, as it's easily obtainable from suppliers.

- 1 Select the weight of the device in the table - greater than or equal to 280 kg
- 2 Horizontally to the left you can see the product number of Walraven VibraTek®
- 3 Horizontally to the right, you can read the deflection
- 4 Locate the column with a frequency lower than 2300 rpm
- 5 Read the damping performance at: cross deflection and frequency

V (%)	Description of damping efficiency			
99	Excellent	Hospitals, hotels, facilities cultural (theaters, centers congress, auditorium)	Residential and office buildings, adjoining rooms to living spaces	Normal requirements: cellars, facilities industrial, shopping centers
93	Perfect			
88	Very good			
81	Good			
67	Sufficient			
20	Medium	Low attenuation or negative impact - contact with the Technical Sales Support Department, to get an alternative solution		
0	No change			
Resonance	Better without insulation			

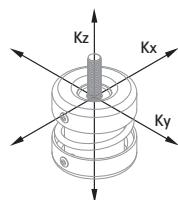
All dimensions shown are in mm, unless specified otherwise.

## The Walraven VibraTek® product range

The Walraven VibraTek® product line consisting of rubber and metal vibroacoustic isolators is a tailor-made solution to eliminate vibration problems in HVAC installations. Our isolators reduce the vibration transmitted by the equipment and ensure the safety and comfort of people and their surrounding environment by reducing harmful noise and vibration to the minimum. In addition, we can combine vibration isolators with Walraven pipe fixings, rail support systems and concrete anchors to provide you with a complete engineered solution from one partner.

# MS-M Spring Mount

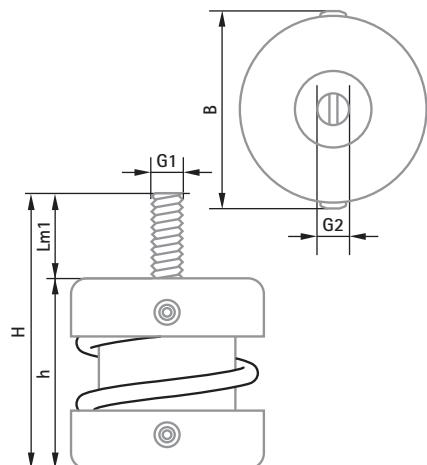
Compact spring isolator for light equipment



## Features and Benefits

- Low-rise spring isolator with M8 external thread for light equipment or tight spaces
- Recommended for machinery with working speeds above 1000 rpm
- Steel frame attached to spring mechanically with metal rivets
- Surface treatment: zinc-plated
- Average ratio  $K_x / K_z = K_y / K_z = 1.3$
- Working temperature range -90 °C till 150 °C

## Table



### Damping efficiency upon disturbing vibration (%)

Part No.	Applied load		Deflection (mm)	rpm	500	800	1000	1200	1500	2000	2500
	(N)	(~kg)			8.3	13.3	16.7	20.0	25.0	33.3	41.7
2800200150	100	10	8.0		18.6	78.7	87.4	91.6	94.8	97.1	98.2
	150	15	12.0		57.3	86.8	91.9	94.5	96.6	98.1	98.8
2800200250	200	20	9.6		40.3	82.9	89.7	93.1	95.7	97.6	98.5
	250	25	12.0		57.3	86.8	91.9	94.5	96.6	98.1	98.8
2800200500	350	36	8.4		25.4	80.0	88.0	92.0	95.0	97.3	98.3
	500	51	12.0		57.3	86.8	91.9	94.5	96.6	98.1	98.8
2800200750	550	56	8.8		31.1	81.0	88.6	92.4	95.3	97.4	98.3
	600	61	9.6		40.3	82.9	89.7	93.1	95.7	97.6	98.5
2800201000	750	76	12.0		57.3	86.8	91.9	94.5	96.6	98.1	98.8
	850	87	10.2		45.7	84.1	90.4	93.5	95.9	97.8	98.6
	1000	102	12.0		57.3	86.8	91.9	94.5	96.6	98.1	98.8

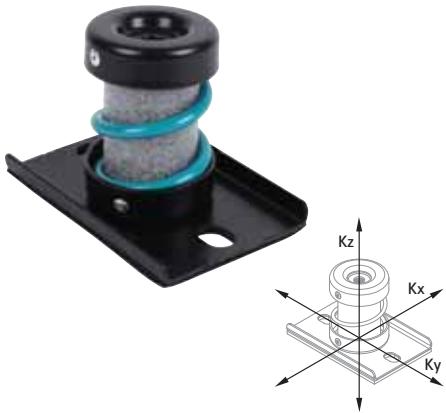
## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	Lm1	B	H	h	G1/G2
2800200150	150/M8	12	25	150	13	140	22.5	Ø 51	73	50.5	M8
2800200250	250/M8	12	40	250	21	230	22.5	Ø 51	73	50.5	M8
2800200500	500/M8	12	80	500	42	450	22.5	Ø 51	73	50.5	M8
2800200750	750/M8	12	125	750	63	680	22.5	Ø 51	73	50.5	M8
2800201000	1000/M8	12	125	1000	83	980	22.5	Ø 51	73	50.5	M8

Walraven VibraTek®

# MS-1 Spring Mount

High performance spring isolator for light equipment



## Features and Benefits

- Recommended for equipment with low working speeds, from 700 rpm and above
- Ribs in the metal base provide increased stiffness
- Slot holes facilitate positioning and anchoring to the base material
- Epoxy powder-coated base, caps and springs provide increased resistance to corrosion
- Average ratio  $K_x / K_z = K_y / K_z = 1.0$
- Working temperature range -90 °C till 150 °C

Table

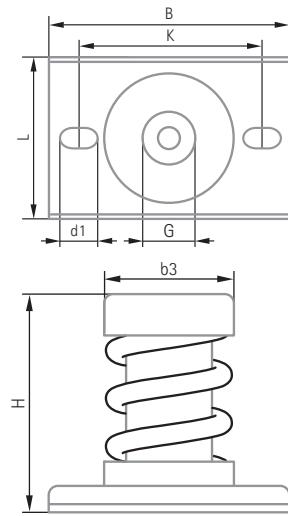
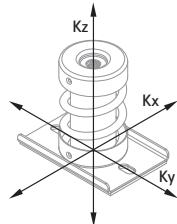
Part No.	Applied load (N)	Elasti-city module (N/mm)	Deflection (mm)	Damping efficiency upon disturbing vibration (%)							
				rpm	500	800	1000	1200	1500	2000	2500
2800300050	25	3	11.5		54.6	86.1	91.5	94.3	96.4	98.0	98.7
	50	5	2.17	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800300150	100	10		15.3	69.4	89.9	93.8	95.8	97.3	98.5	99.1
	150	15	6.52	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800300250	200	20		18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
	250	25	10.87	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800300500	300	31		13.8	64.8	88.7	93.0	95.3	97.0	98.3	98.9
	400	41		18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
2800300750	500	51	21.74	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
	600	61		18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
2800301000	750	76	32.61	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
	800	82		18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
	900	92		20.7	79.0	92.7	95.5	96.9	98.0	98.9	99.3
	1000	102	43.48	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4

## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	K	G	b3	d1
2800300050	50/M8	23	5	50	2	45	70	106	71.5	80	M8	Ø 51	16x11
2800300150	150/M8	23	20	150	7	140	70	106	71.5	80	M8	Ø 51	16x11
2800300250	250/M8	23	30	250	11	230	70	106	71.5	80	M8	Ø 51	16x11
2800300500	500/M8	23	50	500	22	460	70	106	71.5	80	M8	Ø 51	16x11
2800300750	750/M8	23	80	750	33	690	70	106	71.5	80	M8	Ø 51	16x11
2800301000	1000/M8	23	100	1000	43	920	70	106	71.5	80	M8	Ø 51	16x11

# MS-1X Spring Mount

High performance spring isolator for medium to heavy equipment



## Features and Benefits

- Recommended for equipment with low working speeds, from 600 rpm and above
- Flexible internal filler prevents debris and solid elements entering and damaging the spring under load
- Ribs in the metal base provide increased stiffness
- Slot holes facilitate positioning and anchoring to the base material
- Epoxy powder-coated base, caps and springs provide increased resistance to corrosion
- Average ratio  $K_x / K_z = K_y / K_z = 0.7$
- Working temperature range -90 °C till 150 °C

Table

Part No.	Damping efficiency upon disturbing vibration (%)										
	Applied load		Deflection	rpm	500	800	1000	1200	1500	2000	
(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7	
2800401250	1100	112	22.0		80.5	93.2	95.7	97.1	98.2	99.0	99.3
	1250	127	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2800401500	1400	143	23.3		81.8	93.6	96.0	97.3	98.3	99.0	99.4
	1500	153	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2800402000	1750	178	21.9		80.4	93.1	95.7	97.1	98.1	99.0	99.3
	2000	204	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2800403000	2200	224	18.3		75.6	91.7	94.9	96.5	97.8	98.8	99.2
	2600	265	21.7		80.1	93.1	95.7	97.0	98.1	99.0	99.3
2800404000	3000	306	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
	3500	357	21.9		80.4	93.1	95.7	97.1	98.1	99.0	99.3
2800404000	4000	408	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
	4300	438	21.5		80.0	93.0	95.6	97.0	98.1	98.9	99.3
2800405000	4600	469	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
	5000	510	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2800406000	5300	540	22.1		80.6	93.2	95.8	97.1	98.2	99.0	99.3
	5600	571	23.3		81.8	93.6	96.0	97.3	98.3	99.0	99.4
2800406000	6000	612	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4

## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	K	G	d1	b3
2800401250	1250/M12	25	130	1250	50	1150	86	128	116	96	M12	20x11	69
2800401500	1500/M12	25	150	1500	60	1380	86	128	116	96	M12	20x11	69
2800402000	2000/M12	25	200	2000	80	1840	86	128	116	96	M12	20x11	69
2800403000	3000/M12	25	300	3000	120	2760	86	128	116	96	M12	20x11	69
2800404000	4000/M12	25	400	4000	160	3680	86	128	116	96	M12	20x11	69
2800405000	5000/M12	25	500	5000	200	4600	86	128	116	96	M12	20x11	69
2800406000	6000/M12	25	600	6000	240	5520	86	128	116	96	M12	20x11	69

Walraven VibraTek®

# MS-1X-CBL Spring Mount

High performance spring isolator for use with A-L1 welding bracket and concrete inertia base frames

## Features and Benefits



- Recommended for machinery with low working speeds above 600 rpm
- Flexible internal filler prevents debris and solid elements entering and damaging the spring under load
- Ribs in the metal base provide increased stiffness
- Slot holes facilitate positioning and anchoring to the base material
- Epoxy powder-coated base, caps and springs provide increased resistance to corrosion
- Average ratio  $K_x / K_z = K_y / K_z = 0.7$
- Working temperature range -90 °C till 150 °C

Table

Part No.	Damping efficiency upon disturbing vibration (%)										
	Applied load (N)	Deflection (~kg)	rpm	500 Hz	800 8.3	1000 13.3	1200 16.7	1500 20.0	2000 25.0	2500 33.3	
2801901000	800	82	20.0		78.1	92.5	95.3	96.8	98.0	98.9	99.3
	1000	102	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2801901250	1100	112	22.0		80.5	93.2	95.7	97.1	98.2	99.0	99.3
	1250	127	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2801901500	1400	143	23.3		81.8	93.6	96.0	97.3	98.3	99.0	99.4
	1500	153	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2801902000	1750	178	21.9		80.4	93.1	95.7	97.1	98.1	99.0	99.3
	2000	204	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
	2200	224	18.3		75.6	91.7	94.9	96.5	97.8	98.8	99.2
	2600	265	21.7		80.1	93.1	95.7	97.0	98.1	99.0	99.3
2801903000	3000	306	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
	3500	357	21.9		80.4	93.1	95.7	97.1	98.1	99.0	99.3
2801904000	4000	408	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
	4300	438	21.5		80.0	93.0	95.6	97.0	98.1	98.9	99.3
2801905000	4600	469	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
	5000	510	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2801906000	5300	540	22.1		80.6	93.2	95.8	97.1	98.2	99.0	99.3
	5600	571	23.3		81.8	93.6	96.0	97.3	98.3	99.0	99.4
	6000	612	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4

## Specifications

Part No.	Dimension (mm)	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	h	K	d1	b3
2801901000	1000/M10	25	100	1000	40	920	86	128	140.1	121.2	96	20x11	Ø 69
2801901250	1250/M10	25	130	1250	50	1150	86	128	140.1	121.2	96	20x11	Ø 69
2801901500	1500/M10	25	150	1500	60	1380	86	128	140.1	121.2	96	20x11	Ø 69
2801902000	2000/M10	25	200	2000	80	1840	86	128	140.1	121.2	96	20x11	Ø 69
2801903000	3000/M10	25	300	3000	120	2760	86	128	140.1	121.2	96	20x11	Ø 69
2801904000	4000/M10	25	400	4000	160	3680	86	128	140.1	121.2	96	20x11	Ø 69
2801905000	5000/M10	25	500	5000	200	4600	86	128	140.1	121.2	96	20x11	Ø 69
2801906000	6000/M10	25	600	6000	240	5520	86	128	140.1	121.2	96	20x11	Ø 69

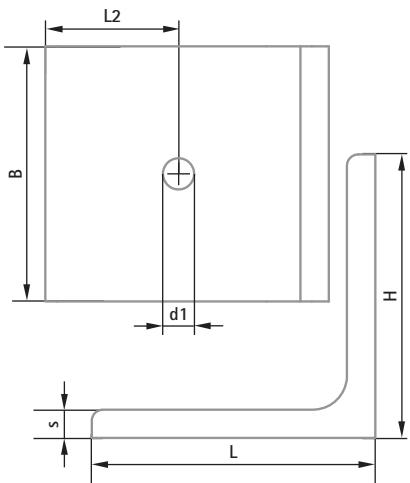
# A-L1 Angle Bracket for Welding

An L-shaped welding bracket

## Features and Benefits



- For welding to concrete inertia base frames and use in combination with MS-1X-CBL spring isolators
- Welding provides flexibility in application design
- Epoxy-powder coated for corrosion resistance



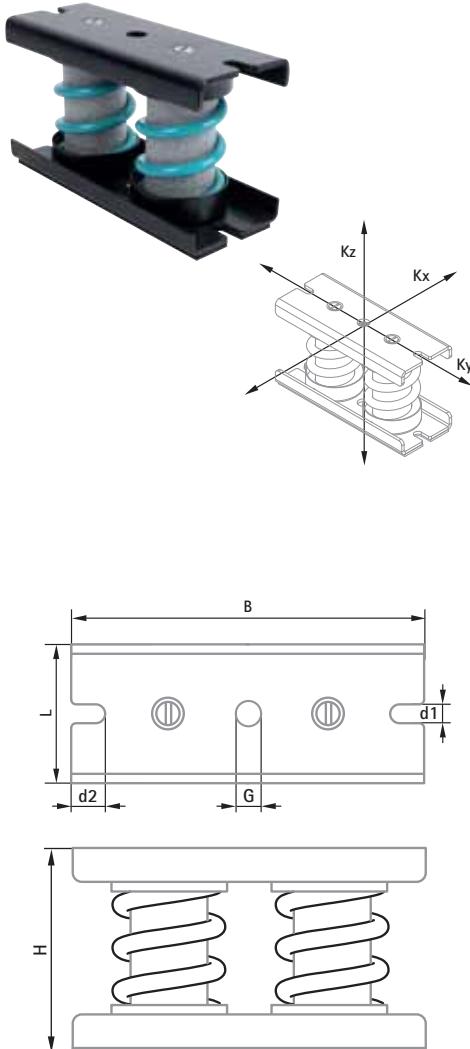
## Specifications

Part No.	Dimension	L	B	H	s	d1	L2
2802100100	100 x 100 x 90	100	90	100	10	Ø 11	47

Walraven VibraTek®

# MS-2X Spring Mount

High performance spring isolator for heavy equipment



## Features and Benefits

- Recommended for equipment with low working speeds, from 600 rpm and above
- Flexible internal filler prevents debris and solid elements entering and damaging the spring under load
- Ribs in the metal base provide increased stiffness
- Slot holes facilitate positioning and anchoring to the base material
- Epoxy powder-coated base, caps and springs provide increased resistance to corrosion
- Ratio  $K_x / K_z = 0.98$
- Ratio  $K_y / K_z = 1.4$
- Working temperature range -90°C till 150°C

## Table

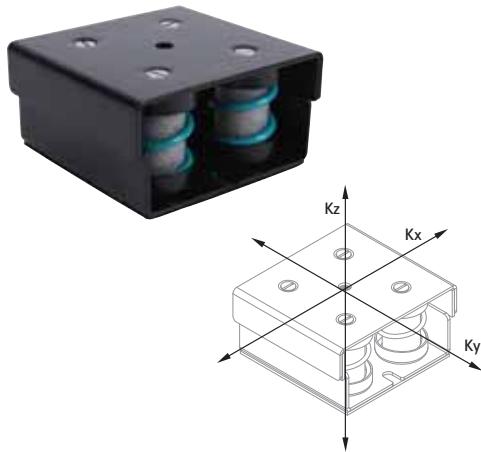
Part No.	Damping efficiency upon disturbing vibration (%)										
	Applied load		Deflection	rpm	500	800	1000	1200	1500	2000	
(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7	
2802003000	2000	204	16.7		72.5	90.8	94.3	96.1	97.5	98.6	99.1
	3000	306	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2802004000	3500	357	21.9		80.4	93.1	95.7	97.1	98.1	99.0	99.3
	4000	408	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2802006000	5000	510	20.8		79.2	92.8	95.5	96.9	98.0	98.9	99.3
	6000	612	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
2802008000	7000	714	21.9		80.4	93.1	95.7	97.1	98.1	99.0	99.3
	7500	765	23.4		81.9	93.6	96.0	97.3	98.3	99.0	99.4
2802010000	8000	815	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
	9000	917	22.5		81.0	93.4	95.8	97.2	98.2	99.0	99.4
2802012000	10000	1019	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4
	11000	1121	22.9		81.4	93.5	95.9	97.2	98.2	99.0	99.4
2802012000	11500	1172	24.0		82.4	93.8	96.1	97.3	98.3	99.1	99.4
	12000	1223	25.0		83.2	94.1	96.3	97.4	98.4	99.1	99.4

## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	G	d1	d2
2802003000	3000/M12	25	300	3000	120	2760	83	210	122	M12	11	20
2802004000	4000/M12	25	400	4000	160	3680	83	210	122	M12	11	20
2802006000	6000/M12	25	600	6000	240	5520	83	210	122	M12	11	20
2802008000	8000/M12	25	800	8000	320	7360	83	210	122	M12	11	20
2802010000	10000/M12	25	1000	10000	400	9200	83	210	122	M12	11	20
2802012000	12000/M12	25	1200	12000	480	11040	83	210	122	M12	11	20

# MS-4 Spring Mount

High performance spring isolator for medium to heavy equipment



## Features and Benefits

- Recommended for equipment with low working speeds, from 600 rpm and above
- Flexible internal filler prevents debris and solid elements entering and damaging the spring under load
- Ribs in the metal base provide increased stiffness
- Slot holes facilitate positioning and anchoring to the base material
- Epoxy powder-coated base, caps and springs provide increased resistance to corrosion
- Average ratio  $K_x / K_z = K_y / K_z = 2.0$
- Working temperature range -90 °C till 150 °C

## Table

Part No.	Applied load (N)	Deflection (~kg)	(mm)	rpm	Damping efficiency upon disturbing vibration (%)							
					500 Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7
2800501000	800	82	18.4			75.8	91.7	94.9	96.5	97.8	98.8	99.2
	1000	102	23.0			81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800501500	1250	127	19.2			77.0	92.1	95.1	96.6	97.9	98.8	99.2
	1500	153	23.0			81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800502000	1750	178	20.1			78.3	92.5	95.3	96.8	98.0	98.9	99.3
	2000	204	23.0			81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800503000	2250	229	17.3			73.7	91.2	94.5	96.3	97.6	98.7	99.2
	2750	280	21.1			79.5	92.9	95.6	97.0	98.1	98.9	99.3
2800504000	3000	306	23.0			81.5	93.5	95.9	97.2	98.2	99.0	99.4
	3500	357	20.1			78.3	92.5	95.3	96.8	98.0	98.9	99.3
2800505000	4000	408	23.0			81.5	93.5	95.9	97.2	98.2	99.0	99.4
	4250	433	19.6			77.5	92.3	95.2	96.7	97.9	98.8	99.3
2800505000	4750	484	21.9			80.3	93.1	95.7	97.1	98.1	99.0	99.3
	5000	510	23.0			81.5	93.5	95.9	97.2	98.2	99.0	99.4

## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	G	b3
2800501000	1000/M10	23	100	1000	43	900	145	158	80	M10	140
2800501500	1500/M10	23	130	1500	65	1350	145	158	80	M10	140
2800502000	2000/M10	23	200	2000	87	1800	145	158	80	M10	140
2800503000	3000/M10	23	300	3000	130	2700	145	158	80	M10	140
2800504000	4000/M10	23	400	4000	174	3600	145	158	80	M10	140
2800505000	5000/M10	23	500	5000	217	4500	145	158	80	M10	140

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# MR-B Rubber Mount

Bell-shaped elastomer isolator for isolation of equipment and machinery

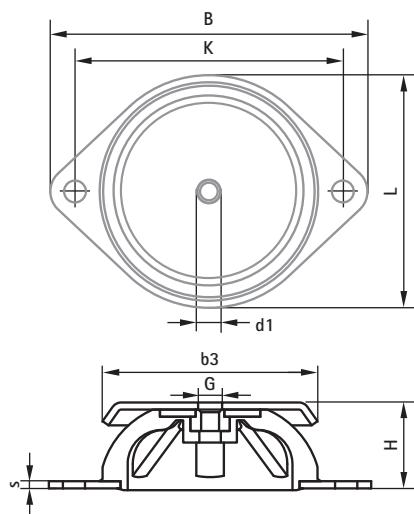
## Features and Benefits



- Ideally suited for machinery with radial vibration (as opposed to axial) and prone to sudden or pronounced starts and stops
- Recommended for machinery with working speeds above 2500 rpm, providing a degree of vibration insulation from 75% to 80%
- Metal and rubber parts can be separated for recycling
- Working temperature range -20 °C till 90 °C

Table

Part No.	(N) (~kg)	(mm)	Hz	Damping efficiency upon disturbing vibration (%)							
				500 8.3	800 13.3	1000 16.7	1200 20.0	1500 25.0	2000 33.3	2500 41.7	
2801800240	200	20	2.9			7.4	55.5	72.8	84.2	91.7	94.8
	240	24	3.5			33.1	65.5	78.3	87.1	93.1	95.7
2801800750	450	46	2.4			40.3	64.9	80.1	89.7	93.6	
	750	76	4.0			46.0	71.1	81.5	88.9	94.1	96.3
2801801500	1000	102	3.7			38.1	67.6	79.5	87.8	93.5	95.9
	1500	153	5.5			65.8	80.5	87.2	92.2	95.7	97.3



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	K	G	s	d1	d2	b3
2801800240	240/M6	3.5	25	240	69	225	66	90	24	76	M6	2	6.7	6.2	60
2801800750	750/M8	4	50	750	188	700	86	120	27	100	M8	3	8.2	8.2	80
2801801500	1500/M10	5.5	100	1500	273	1400	106	148	28	124	M10	3	11	10.2	100

# MR-L Levelling Mount

Rubber mount with M8 connection for equipment isolation and levelling

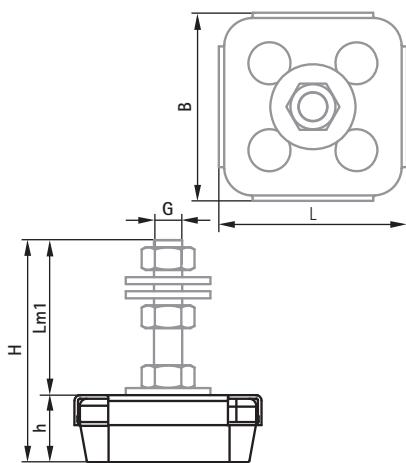
## Features and Benefits



- Rubber isolator with DIN 934 nuts and DIN 9012 washers included in delivery for mounting and levelling equipment
- Simple to install and does not need to be fixed to the supporting structure
- Recommended for machinery with working speeds above 2500 rpm, providing a degree of vibration insulation from 75% to 80%
- Metal and rubber parts can be separated for recycling
- Working temperature range -20 °C till 90 °C
- Hardness 45 Shore A

## Table

Part No.	Damping efficiency upon disturbing vibration (%)											
	Applied load			Deflection	rpm	500	800	1000	1200	1500	2000	2500
	(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7	
2800101000	500	51	2.0				19	55	75	87	92	
	600	61	2.4				40	65	80	90	94	
	800	82	3.2			22	61	76	86	92	95	
	1000	102	4.0			46	71	82	89	94	96	



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	Lm1	G	h
2800101000	1000/M8	4	50	1000	250	800	53	53	63	44	M8	19

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# MR-L Levelling Mount

Rubber mount with M10 connection for equipment isolation and levelling

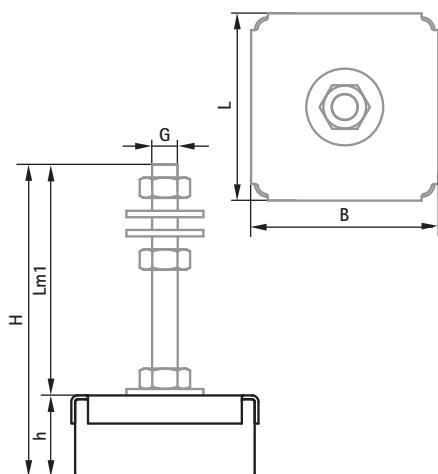


## Features and Benefits

- Rubber isolator with DIN 934 nuts and DIN 9012 washers included in delivery for mounting and levelling equipment
- Simple to install and does not need to be fixed to the supporting structure
- Recommended for machinery with working speeds above 2500 rpm, providing a degree of vibration insulation from 75% to 80%
- Metal and rubber parts can be separated for recycling
- Working temperature range -20 °C till 90 °C
- Hardness 45 Shore A

## Table

Part No.	Damping efficiency upon disturbing vibration (%)										
	Applied load		Deflection	rpm	500	800	1000	1200	1500	2000	2500
	(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7
2800103000	1250	127	1.7		8.3				40	69	84
	1500	153	2.0					19	55	75	87
	1750	178	2.3					37	64	79	89
	3000	306	4.0				46	71	82	89	94



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	Lm1	G	h
2800103000	3000/M10	7.5	20	3000	400	2500	73	73	121.5	90	M10	31.5

# MR-L Levelling Mount

Rubber mount with M12 connection for equipment isolation and levelling

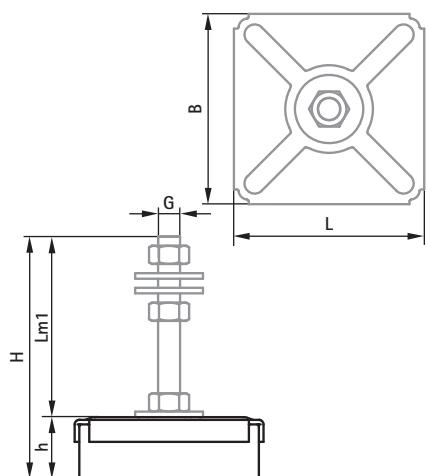


## Features and Benefits

- Rubber isolator with DIN 934 nuts and DIN 9012 washers included in delivery for mounting and levelling equipment
- Simple to install and does not need to be fixed to the supporting structure
- Recommended for machinery with working speeds above 2500 rpm, providing a degree of vibration insulation from 75% to 80%
- Metal and rubber parts can be separated for recycling
- Working temperature range -20 °C till 90 °C
- Hardness 45 Shore A

## Table

Part No.	(N)	Deflection (~kg)	(mm)	Hz	Damping efficiency upon disturbing vibration (%)							
					500 rpm	800 rpm	1000 rpm	1200 rpm	1500 rpm	2000 rpm	2500 rpm	
2800105000	3250	331	2.6	8.3	47	68	82	91	94			
	3500	357	2.8		53	71	83	91	95			
	3750	382	3.0		12	57	74	85	92	95		
	5000	510	4.0		46	71	82	89	94	96		



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	Lm1	G	h
2800105000	5000/M12	4.5	125	5000	1250	4500	103	103	132	100	M12	32

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# MR-L Levelling Mount

Rubber mount with M16 connection for equipment isolation and levelling

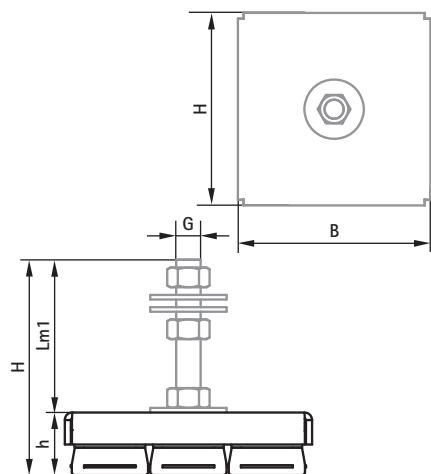
## Features and Benefits



- Rubber isolator with DIN 934 nuts and DIN 9012 washers included in delivery for mounting and levelling equipment
- Simple to install and does not need to be fixed to the supporting structure
- Recommended for machinery with working speeds above 2500 rpm, providing a degree of vibration insulation from 75% to 80%
- Metal and rubber parts can be separated for recycling
- Working temperature range -20 °C till 90 °C
- Hardness 45 Shore A

## Table

Part No.	Damping efficiency upon disturbing vibration (%)										
	Applied load		Deflection	rpm	500	800	1000	1200	1500	2000	2500
	(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7
2800108000	5500	561	2.8				52	71	83	91	94
	6000	612	3.0			12	57	74	85	92	95
	7000	714	3.5			33	66	78	87	93	96
	8000	815	4.0			46	71	82	89	94	96



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	Lm1	G	h
2800108000	8000/M16	7.5	500	8000	1067	7500	162	162	141	100	M16	41

# HS-1 Spring Hanger

High performance spring isolator for light suspended loads

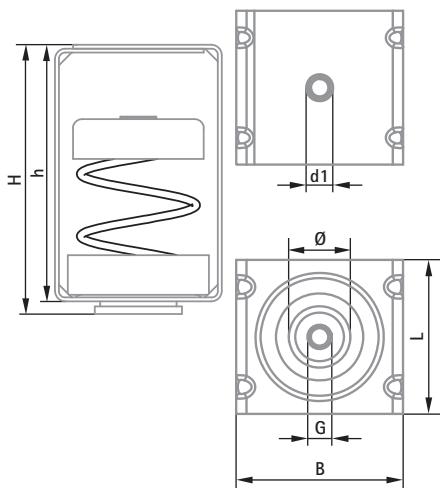
## Features and Benefits



- Simple to install and does not need to be fixed to the base material
- Recommended for machinery with low working speeds above 700 rpm
- Rubber spring base cup prevents contact between housing and the spring
- Epoxy powder-coated housing, cap and spring provide increased resistance to corrosion
- Working temperature range -90 °C till 150 °C

## Table

Part No.	Damping efficiency upon disturbing vibration (%)									
	Applied load (N) (~kg)	Deflection (mm)	rpm Hz	500 8.3	800 13.3	1000 16.7	1200 20.0	1500 25.0	2000 33.3	2500 41.7
2800600050	25	3	11.5	54.6	86.1	91.5	94.3	96.4	98.0	98.7
	50	5	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800600150	100	10	15.3	69.4	89.9	93.8	95.8	97.3	98.5	99.1
	150	15	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800600250	200	20	18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
	250	25	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800600500	300	31	13.8	64.8	88.7	93.0	95.3	97.0	98.3	98.9
	400	41	18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
2800600750	500	51	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
	600	61	18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
2800601000	750	76	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4
	800	82	18.4	75.8	91.7	94.9	96.5	97.8	98.8	99.2
2800601000	900	92	20.7	79.0	92.7	95.5	96.9	98.0	98.9	99.3
	1000	102	23.0	81.5	93.5	95.9	97.2	98.2	99.0	99.4



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	h	G	Ø	d1
2800600050	50/M8	23	5	50	2	45	60	65	105	100	M8	24	Ø 10.5
2800600150	150/M8	23	20	150	7	140	60	65	105	100	M8	24	Ø 10.5
2800600250	250/M8	23	30	250	11	230	60	65	105	100	M8	24	Ø 10.5
2800600500	500/M8	23	50	500	22	450	60	65	105	100	M8	24	Ø 10.5
2800600750	750/M8	23	80	750	33	690	60	65	105	100	M8	24	Ø 10.5
2800601000	1000/M8	23	100	1000	43	920	60	65	105	100	M8	24	Ø 10.5

Walraven VibraTek®

# HS-1X Spring Hanger

High performance spring isolator for medium to heavy suspended loads

## Features and Benefits



- Simple to install and does not need to be fixed to the base material
- Recommended for machinery with low working speeds above 700 rpm
- Rubber spring base cup prevents contact between housing and the spring
- Epoxy powder-coated housing, cap and spring provide increased resistance to corrosion
- Working temperature range -90 °C till 150 °C

Table

Part No.	Damping efficiency upon disturbing vibration (%)										
	Applied load		Deflection	rpm	500	800	1000	1200	1500	2000	2500
	(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7
2800701000	800	82	18.4		75.8	91.7	94.9	96.5	97.8	98.8	99.2
2800701250	1000	102	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
	1100	112	20.2		78.4	92.6	95.4	96.8	98.0	98.9	99.3
2800701500	1250	127	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
	1400	143	21.5		79.9	93.0	95.6	97.0	98.1	98.9	99.3
2800702000	1500	153	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
	1750	178	18.3		75.6	91.7	94.8	96.5	97.8	98.8	99.2
2800703000	2000	204	20.9		79.3	92.8	95.5	96.9	98.1	98.9	99.3
	2200	224	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800704000	2600	265	19.9		78.0	92.4	95.3	96.8	98.0	98.9	99.3
	3000	306	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800705000	3250	331	18.7		76.2	91.9	95.0	96.5	97.8	98.8	99.2
	3750	382	21.6		80.0	93.0	95.7	97.0	98.1	98.9	99.3
2800706000	4000	408	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
	5250	535	24.2		82.5	93.8	96.1	97.4	98.3	99.1	99.4
2800705000	5750	586	26.5		84.3	94.4	96.5	97.6	98.5	99.1	99.5
	5000	510	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4
2800706000	5250	535	20.1		78.3	92.5	95.3	96.8	98.0	98.9	99.3
	5750	586	22.0		80.5	93.2	95.8	97.1	98.2	99.0	99.3
2800706000	6000	612	23.0		81.5	93.5	95.9	97.2	98.2	99.0	99.4

## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	h	G	Ø
2800701000	1000/M12	25	100	1000	40	900	75	100	156	150	M12	22
2800701250	1250/M12	25	130	1250	50	1150	75	100	156	150	M12	22
2800701500	1500/M12	25	150	1500	60	1380	75	100	156	150	M12	22
2800702000	2000/M12	25	200	2000	80	1840	75	100	156	150	M12	22
2800703000	3000/M12	25	300	3000	120	2760	75	100	156	150	M12	22
2800704000	4000/M12	25	400	4000	160	3680	75	100	156	150	M12	22
2800705000	5000/M12	25	500	5000	200	4600	75	100	156	150	M12	22
2800706000	6000/M12	25	600	6000	240	5400	75	100	156	150	M12	22

# HR-1 Rubber Hanger

Rubber hanger for isolation of suspended ventilation and AC systems

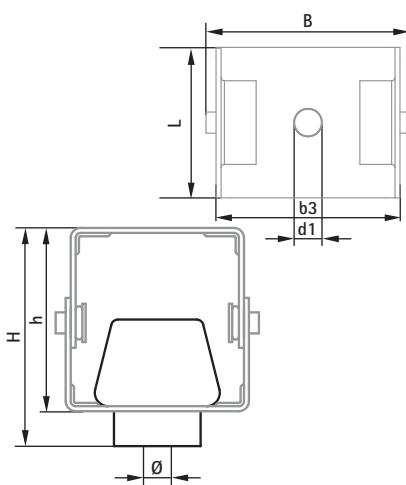
## Features and Benefits



- Small footprint allows placement in compact spaces
- Simple to install and adaptable to a sloping roof or ceiling, part of the metal housing swivels
- Working temperature range -20 °C till 90 °C
- Hardness 45 / 50 Shore A
- Steel: zinc plated

Table

Part No.	Applied load (N) (~kg)	Elasti-city module (N/mm)	Deflec- tion (mm)	Damping efficiency upon disturbing vibration (%)							
				Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7
2800800300	200	20	4.7		57.0	76.2	84.6	90.7	94.9	96.8	
	250	25	5.8		68.3	81.8	88.0	92.7	96.0	97.5	
	300	31	42.86	7.0		74.9	85.3	90.2	94.0	96.7	97.9
	350	36		5.3		63.9	79.6	86.6	91.8	95.6	97.2
2800800450	400	41		6.0		69.8	82.6	88.5	92.9	96.1	97.6
	450	46	66.18	6.8		74.0	84.8	89.9	93.8	96.6	97.8



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H	h	Ø	b3	d1
2800800300	300	7.0	5	300	43	250	45	61	65.5	55	Ø 8	55	Ø 8.5
2800800450	450	7.0	10	450	64	400	45	61	65.5	55	Ø 8	55	Ø 8.5

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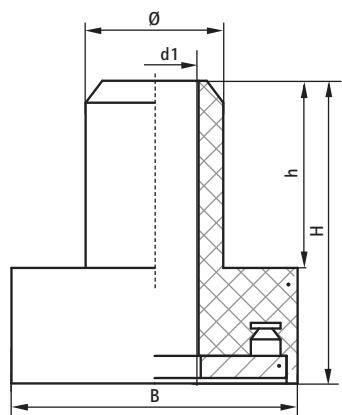
# SA-1 Silent Absorber

Silent rubber absorber for isolating metal to metal contact

## Features and Benefits



- A versatile viscoelastic rubber absorber for preventing metal-to-metal contact in joined or fastened surfaces
- Prevents transmission of vibration and noise
- With Ø 8 mm hole for use with M8 threaded rods
- Simple installation
- Working temperature range -20 °C till 90 °C



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	B	H	h	Ø	d1
2800900300	300	3	5	300	100	180	Ø 26	27.5	17	Ø 12.5	Ø 8

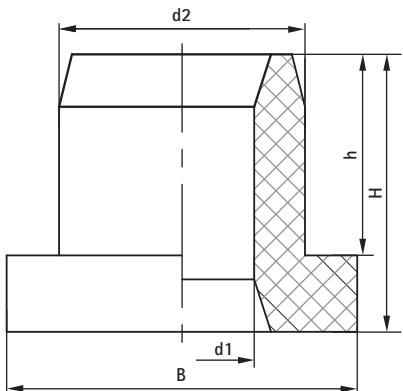
# SA-2 Silent Absorber

Silent rubber absorber for isolating metal to metal contact

## Features and Benefits



- A versatile viscoelastic rubber absorber for preventing metal-to-metal contact in joined or fastened surfaces
- Prevents transmission of vibration and noise
- With Ø 14 mm hole for use with M10 and M12 threaded rods
- Simple installation
- Working temperature range -20 °C till 90 °C



## Specifications

Part No.	Dimension	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	B	H	h	d1	d2
2801000300	300	3	10	300	100	250	Ø 33.5	26.5	19.2	Ø 13.8	Ø 23.5

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# SA-3 Silent Absorber

Silent rubber absorber for isolating metal to metal contact

## Features and Benefits

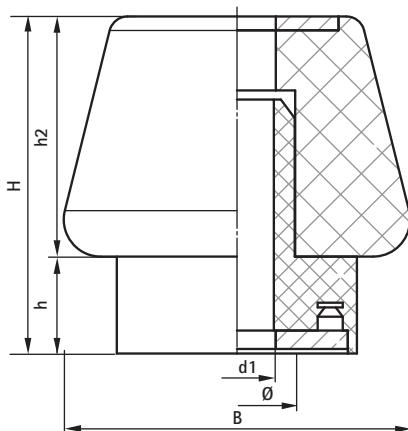


- A versatile viscoelastic two-piece rubber absorber for preventing metal-to-metal contact in joined or fastened surfaces
- Formed of two rubber parts which fit into each other, making it suitable for various fixing plate thicknesses
- Prevents transmission of vibration and noise
- Ideal isolation of HVAC equipment
- For use with M8 threaded rods
- Simple installation
- Working temperature range -20 °C till 90 °C

## Table

Damping efficiency upon disturbing vibration (%)

Part No.	Applied load (N)	Deflection (~kg)	rpm	Damping efficiency upon disturbing vibration (%)							
				500	800	1000	1200	1500	2000	2500	
	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7			
2800800300	200	20	2.3								
	250	25	2.9								
	300	31	3.5								
2800800450	350	36	3.1								
	400	41	3.6								
	450	46	4.0								



## Specifications

Part No.	Dimension	Colour	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	B	H	h	h2	Ø	d1
2801100300	300	Grey	7	5	300	43	200	37.5	36.5	10.5	26	12.5	Ø 8
2801100450	450	Black	7	10	450	64	400	37.5	36.5	10.5	26	12.5	Ø 8

# SB-MM Silentblock

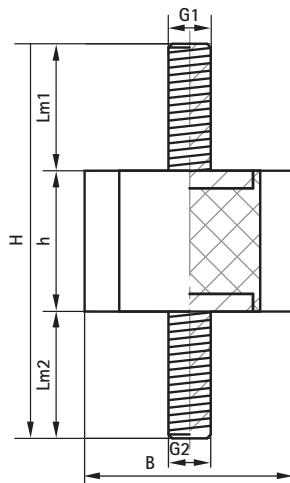
A rubber silentblock with two external threads



## Features and Benefits

- A universal rubber absorber, ideal for use with all kinds of elastic suspension or mounting of equipment
- Ideal for use with machinery and equipment mounted on metallic surface
- SB-MM with two external threads
- For use in compression only
- Working temperature range -20 °C till 90 °C

Table



### Damping efficiency upon disturbing vibration (%)

Part No.	Applied load		Deflection (mm)	rpm	500	800	1000	1200	1500	2000	2500			
	(N)	(~kg)			Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7		
2801400181	150	15	1.7						40.3	68.5	84.4	90.6		
	180	18	2.0						18.6	54.7	75.1	87.4	92.3	
2801400291	250	25	1.7						43.4	69.9	85.0	90.9		
	290	30	2.0						18.6	54.7	75.1	87.4	92.3	
2801400420	350	36	2.1						24.3	57.3	76.3	87.9	92.6	
	420	43	2.5						44.0	66.8	81.0	90.1	93.9	
2801400750	450	46	2.4						40.3	64.9	80.1	89.7	93.6	
	550	56	2.9						8.4	55.9	73.0	84.3	91.7	94.9
2801401170	750	76	4.0						46.0	71.1	81.5	88.9	94.1	96.3
	1000	102	3.4						30.4	64.4	77.7	86.8	93.0	95.6
2801401690	1170	119	4.0						46.0	71.1	81.5	88.9	94.1	96.3
	1200	122	2.8						2.5	53.8	71.9	83.7	91.4	94.7
2801401690	1500	153	3.6						34.7	66.2	78.7	87.3	93.3	95.8
	1690	172	4.0						46.0	71.1	81.5	88.9	94.1	96.3

## Specifications

Part No.	Dimension	Max. deflection (mm)	Max. load (N)	Spring stiffness k (N/mm)	Lm1	Lm2	B	H	h	G1	G2
2801400181	180/M8	2.0	180	90	18	18	20	56	20	M8	M8
2801400291	290/M8	2.0	290	145	18	18	25	56	20	M8	M8
2801400420	420/M8	2.5	420	168	23	23	30	71	25	M8	M8
2801400750	750/M8	4.0	750	188	23	23	40	86	40	M8	M8
2801401170	1170/M10	4.0	1170	293	27	27	50	94	40	M10	M10
2801401690	1690/M12	4.0	1690	423	37	37	60	114	40	M12	M12

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# SB-MF Silentblock

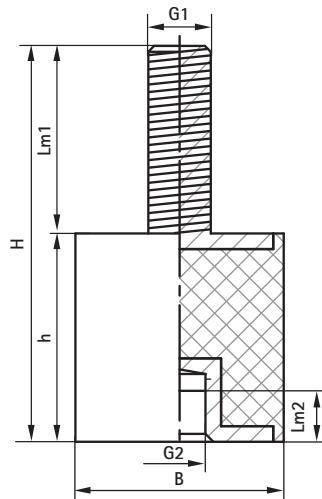
A rubber silentblock with an external and internal thread



## Features and Benefits

- A universal rubber absorber, ideal for use with all kinds of elastic suspension or mounting of equipment
- Ideal for use with machinery and equipment mounted on metallic surface
- SB-MF with one external and one internal thread
- For use in compression only
- Working temperature range -20 °C till 90 °C

Table



Part No.	Damping efficiency upon disturbing vibration (%)												
	Applied load		Deflection	rpm	500	800	1000	1200	1500	2000	2500		
(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7			
2801500181	150	15	1.7					40.3	68.5	84.4	90.6		
	180	18	2.0					18.6	54.7	75.1	87.4	92.3	
2801500291	250	25	1.7					43.4	69.9	85.0	90.9		
	290	30	2.0					18.6	54.7	75.1	87.4	92.3	
2801500420	350	36	2.1					24.3	57.3	76.3	87.9	92.6	
	420	43	2.5					44.0	66.8	81.0	90.1	93.9	
2801500750	450	46	2.4					40.3	64.9	80.1	89.7	93.6	
	550	56	2.9					8.4	55.9	73.0	84.3	91.7	94.9
2801501170	750	76	4.0					46.0	71.1	81.5	88.9	94.1	96.3
	1000	102	3.4					30.4	64.4	77.7	86.8	93.0	95.6
2801501690	1170	119	4.0					46.0	71.1	81.5	88.9	94.1	96.3
	1200	122	2.8					2.5	53.8	71.9	83.7	91.4	94.7
2801501690	1500	153	3.6					34.7	66.2	78.7	87.3	93.3	95.8
	1690	172	4.0					46.0	71.1	81.5	88.9	94.1	96.3

## Specifications

Part No.	Dimension	Max. deflection (mm)	Max. load (N)	Spring stiffness k (N/mm)	Lm1	Lm2	B	H	h	G1	G2
2801500181	180/M8	2.0	180	90	18	6	20	38	20	M8	M8
2801500291	290/M8	2.0	290	145	18	6	25	38	20	M8	M8
2801500420	420/M8	2.5	420	168	23	7	30	48	25	M8	M8
2801500750	750/M8	4.0	750	188	23	7	40	63	40	M8	M8
2801501170	1170/M10	4.0	1170	293	27	7	50	67	40	M10	M10
2801501690	1690/M12	4.0	1690	423	37	10	60	77	40	M12	M12

# SB-FF Silentblock

A rubber silentblock with two internal threads

## Features and Benefits



- A universal rubber absorber, ideal for use with all kinds of elastic suspension or mounting of equipment
- Ideal for use with machinery and equipment mounted on metallic surface
- SB-FF with two internal threads
- For use in compression only
- Working temperature range -20 °C till 90 °C

Table

Part No.	Damping efficiency upon disturbing vibration (%)										
	Applied load (N)	Deflection (~kg)	Deflection (mm)	rpm Hz	500 8.3	800 13.3	1000 16.7	1200 20.0	1500 25.0	2000 33.3	2500 41.7
2801600181	150	15	1.7					40.3	68.5	84.4	90.6
	180	18	2.0					18.6	54.7	75.1	87.4
2801600291	250	25	1.7					43.4	69.9	85.0	90.9
	290	30	2.0					18.6	54.7	75.1	87.4
2801600420	350	36	2.1					24.3	57.3	76.3	87.9
	420	43	2.5					44.0	66.8	81.0	90.1
2801600750	450	46	2.4					40.3	64.9	80.1	93.6
	550	56	2.9					8.4	55.9	73.0	84.3
2801601170	750	76	4.0					46.0	71.1	81.5	88.9
	1000	102	3.4					30.4	64.4	77.7	86.8
2801601690	1170	119	4.0					46.0	71.1	81.5	88.9
	1200	122	2.8					2.5	53.8	71.9	83.7
2801601690	1500	153	3.6					34.7	66.2	78.7	87.3
	1690	172	4.0					46.0	71.1	81.5	88.9

## Specifications

Part No.	Dimension	Max. deflection (mm)	Max. load (N)	Spring stiffness k (N/mm)	Lm1	Lm2	B	H	G1	G2
2801600181	180/M8	2.0	180	90	6	6	20	20	M8	M8
2801600291	290/M8	2.0	290	145	6	6	25	20	M8	M8
2801600420	420/M8	2.5	420	168	7	7	30	25	M8	M8
2801600750	750/M8	4.0	750	188	7	7	40	40	M8	M8
2801601170	1170/M10	4.0	1170	293	7	7	50	40	M10	M10
2801601690	1690/M12	4.0	1690	423	10	10	60	40	M12	M12

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# SB-M Silentblock

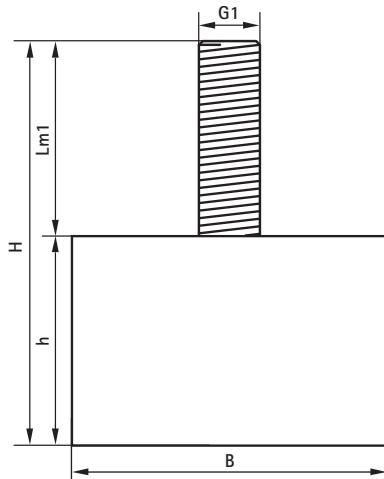
A rubber silentblock with one external thread



## Features and Benefits

- A universal rubber absorber, ideal for use with all kinds of elastic suspension or mounting of equipment
- Ideal for use with machinery and equipment mounted on metallic surface
- SB-M with one internal thread and a rubber base
- For use in compression only
- Working temperature range -20 °C till 90 °C

Table



Part No.	Damping efficiency upon disturbing vibration (%)												
	Applied load		Deflection	rpm	500	800	1000	1200	1500	2000	2500		
(N)	(~kg)	(mm)	Hz	8.3	13.3	16.7	20.0	25.0	33.3	41.7			
2801700181	150	15	1.7					40.3	68.5	84.4	90.6		
	180	18	2.0					18.6	54.7	75.1	87.4	92.3	
2801700291	250	25	1.7					43.4	69.9	85.0	90.9		
	290	30	2.0					18.6	54.7	75.1	87.4	92.3	
2801700420	350	36	2.1					24.3	57.3	76.3	87.9	92.6	
	420	43	2.5					44.0	66.8	81.0	90.1	93.9	
2801700750	450	46	2.4					40.3	64.9	80.1	89.7	93.6	
	550	56	2.9					8.4	55.9	73.0	84.3	91.7	94.9
2801701170	750	76	4.0					46.0	71.1	81.5	88.9	94.1	96.3
	1000	102	3.4					30.4	64.4	77.7	86.8	93.0	95.6
2801701690	1170	119	4.0					46.0	71.1	81.5	88.9	94.1	96.3
	1200	122	2.8					2.5	53.8	71.9	83.7	91.4	94.7
2801701690	1500	153	3.6					34.7	66.2	78.7	87.3	93.3	95.8
	1690	172	4.0					46.0	71.1	81.5	88.9	94.1	96.3

## Specifications

Part No.	Dimension	Max. deflection (mm)	Max. load (N)	Spring stiffness k (N/mm)	Lm1	B	H	h	G
2801700181	180/M8	2.0	180	90	18	20	38	20	M8
2801700291	290/M8	2.0	290	145	18	25	38	20	M8
2801700420	420/M8	2.5	420	168	23	30	48	25	M8
2801700750	750/M8	4.0	750	188	23	40	63	40	M8
2801701170	1170/M10	4.0	1170	293	27	50	68	40	M10
2801701690	1690/M12	4.0	1690	423	37	60	77	40	M12

# PR-T Rubber Tile Pad

A versatile rubber tile pad for general vibroacoustic isolation applications

## Features and Benefits



- Ideal for use as an elastic isolating support for equipment and metal structures
- Supplied as a mat of 64 blocks (8 x 8) joined by a membrane
- Individual 50 x 50 mm pieces can be easily cut to form required support shape
- Transforms to elastic base support when used with a hexagon head screw
- Reusable in the event of machine relocation
- Simple to cut and install
- Hardness 45 Shore A
- Working temperature range -20 °C till 90 °C

Table

Part No.	2801200400	Damping efficiency upon disturbing vibration (%)																												
		Applied load		Elasticity module		Deflection		rpm	500		800		1000		1200		1500		2000		2500		3000		3500		4000		4500	
		(N)	(~kg)	(N/mm)	(mm)	(Hz)	8.3		13.3	16.7	20.0	25.0	33.3	41.7	50.0	58.3	66.7	75.0												
■ Calculation per single brick ■ 1 layer		50	5	250	0.2											1	42	61	72											
		100	10	250	0.4											44	67	78	84	88										
		200	20	250	0.8										1	61	78	86	90	92	94									
		400	41	250	1.6										36	67	84	90	93	95	96	97	97							
		600	61	250	2.4										40	65	80	90	94	96	97	98	98							
		800	82	250	3.2										61	76	86	92	95	97	98	98	99							
		1000	102	250	4.0										46	71	82	89	94	96	97	98	99							
		1200	122	250	4.8										59	77	85	91	95	97	98	98	99							
■ Calculation per single brick ■ 2 layers		50	5	125	0.4												44	67	78	84	88									
		100	10	125	0.8											1	61	78	86	90	92	94								
		200	20	125	1.6										36	67	84	90	93	95	96	97								
		400	41	125	3.2										22	61	76	86	92	95	97	98	99							
		600	61	125	4.8										59	77	85	91	95	97	98	99	99							
		800	82	125	6.4										72	84	89	93	96	98	98	99	99							
		1000	102	125	8.0										19	79	87	92	95	97	98	99	99							
		1200	122	125	9.6										40	83	90	93	96	98	98	99	99							

## Specifications

Part No.	Dimension (mm)	Max. deflection (mm)	Min. load (N)	Max. load (N)	Spring stiffness k (N/mm)	Max. optimal load (N)	L	B	H
2801200400	400 x 400	4.5	2500	74000	257	52000	411.2	411.2	18
-	50 x 50	4.5	39	1156		812	50	50	18

Walraven VibraTek®

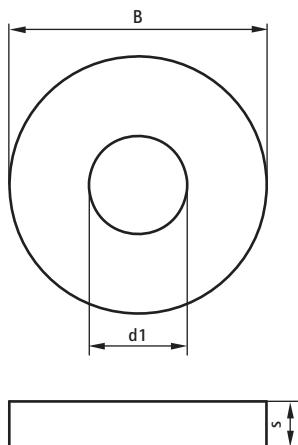
# SA-W Silent Washer

Silent rubber washer for isolating metal to metal contact

## Features and Benefits



- Viscoelastic rubber washers that cushion and prevent transmission of vibroacoustic effects to the structure
- Working temperature range -20 °C till 90 °C



## Specifications

Part No.	Dimension (mm)	B	s	d1
2801306503	6.5 x 3	17	3	6.5
2801308504	8.5 x 4	25	4	8.5
2801308508	8.5 x 8	25	8	8.5
2801310505	10.5 x 5	25	5	10.5
2801312506	12.5 x 5	30	5	12.5
2801316515	16.5 x 15	50	15	16.5

# Selection matrix



Walraven VibraTek®		MS-M Spring Mount	MS-1 Spring Mount	MS-1X Spring Mount	MS-1X- CBL Spring Mount	MS-2X Spring Mount	MS-4 Spring Mount
Page number		12	13	14	15	17	18
Nominal deflection	(mm)	12	23	25	25	25	23
Nominal load	(N)	150 - 1000	50 - 1000	1000 - 6000	1000 - 6000	3000 - 12000	1000 - 5000
Compressors		+	++	+++	+++	+++	++
Pumps		++	++	+++	+++	+++	++
Refrigeration plants			++	+++	+++	+++	++
Air conditioners			++	+++	+++	+++	++
Industrial air conditioning			++	+++	+++	+++	++
Cooling plants			++	+++	+++	+++	++
Air conditioners and splits		++	+++				
Transformers					+++	+++	++
Industrial dehumidifiers		++	++	++	++	++	++
Fan coils suspended							
Boilers							
Pools pressure groups		+++	+++	+++			
Fire fighting groups							
Electromechanical elevators						+++	++
Suspension of steel pipe and valves in the industry							
Suspension machinery and pipes							
Ventilation ducts							
Metal structures							

V (%) Result: 93.9 – 98.9 = Perfect (+++); 87.5 – 93.9 = Very good (++); 81.1 – 87.5 = Good (+)

											
MR-B Rubber Mount	MR-L Levelling Mount	MR-L Levelling Mount	MR-L Levelling Mount	MR-L Levelling Mount	HS-1 Spring Hanger	HS-1X Spring Hanger	HR-1 Rubber Hanger	SA-3 Silent Absorber	SB-MM Silentblock	PR-T Rubber Tile Pad	
19	20	21	22	23	24	25	26	29	30	34	
3.5 - 5.5	4	7.5	4	7.5	23	25	7	7	2 - 4	4.5	
240 - 1500	1000	3000	5000	8000	50 - 1000	1000 - 6000	300 - 450	300 - 450	180 - 1690	1156	
+	+	+	+	+						+	
+	+	+	+	+						+	
+	+	+	+	+						+	
+	+	+	+	+						+	
+	+	+	+	+						+	
+	+	+	+	+					++	++	
+	+	+	+	+						+	
+	+	+	+	+	+++	+++	++	++	++		
	++	++	++	++						++	
	+	+	+	+						+	
	+	+	+	+						+	
	+	+	+	+						+	
	+	++	++	++	+++	+++	++	+			
					+++	+++	++	+			
					+++	+++	++	+			
	++	++	++	++						+++	

The suitability of the product indicated in the table above is determined by the combination of the typical disturbing frequency and the weight of the device, and the elasticity module of the isolator.

# Corrosion resistance

Surface treatment implemented for Walraven VibraTek® products may be used with combination of other Walraven systems protected by zinc plating or Walraven BIS UltraProtect® 1000. Depending on article production process Walraven VibraTek® products may be used in corrosion environments C1 - C4.

In order to ensure the required corrosion resistance for fasteners and connection bolts all scratches caused by installation process, must be covered by products that create a surface protective layer containing at least 70% of metallic zinc elements in its volume. The use of zinc-colored paints does not provide long-term corrosion resistance.

Walraven VibraTek® product	Surface treatment	Corrosion Resistance	
■ Walraven VibraTek® MS-M Spring Mount			
■ Walraven VibraTek® HR-1 Rubber Hanger	White zinc plating	C1	 
■ Walraven VibraTek® MS-1 Spring Mount			
■ Walraven VibraTek® MS-1X Spring Mount			 
■ Walraven VibraTek® MR-L Rubber Levelling Mount			
■ Walraven VibraTek® HS-1 Spring Hanger		Body:	
■ Walraven VibraTek® HS-1X Spring Hanger		1. 1 <sup>st</sup> zinc plated 2. 2 <sup>nd</sup> Protection Epoxy polyester	
■ Walraven VibraTek® MS-1X-CBL Spring Mount		Springs:	
■ Walraven VibraTek® MS-2X Spring Mount		3. 1 <sup>st</sup> passivated initial and/or primer 4. 2 <sup>nd</sup> Protection Epoxy polyester	C4
■ Walraven VibraTek® MS-4 Spring Mount			 

For further details please contact us: [walraven.com/en/vibration-isolation](http://walraven.com/en/vibration-isolation).

# Technical Support and Advice

Our Technical Support Team is ready to guide you through the selection process of the correct isolator. We will ask you the right questions to determine the circumstances of the application, perform relevant calculations and recommend the most effective Walraven VibraTek® solution.

To find out how we can support you,  
[visit walraven.com/en/vibration-isolation](http://walraven.com/en/vibration-isolation).



## Find out how we can support you

Would you like to find out more about any of the solutions described in this brochure?  
Or would you like to discuss how we could help you find the best possible solution for your project?  
Get in touch today!

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### Walraven Group

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