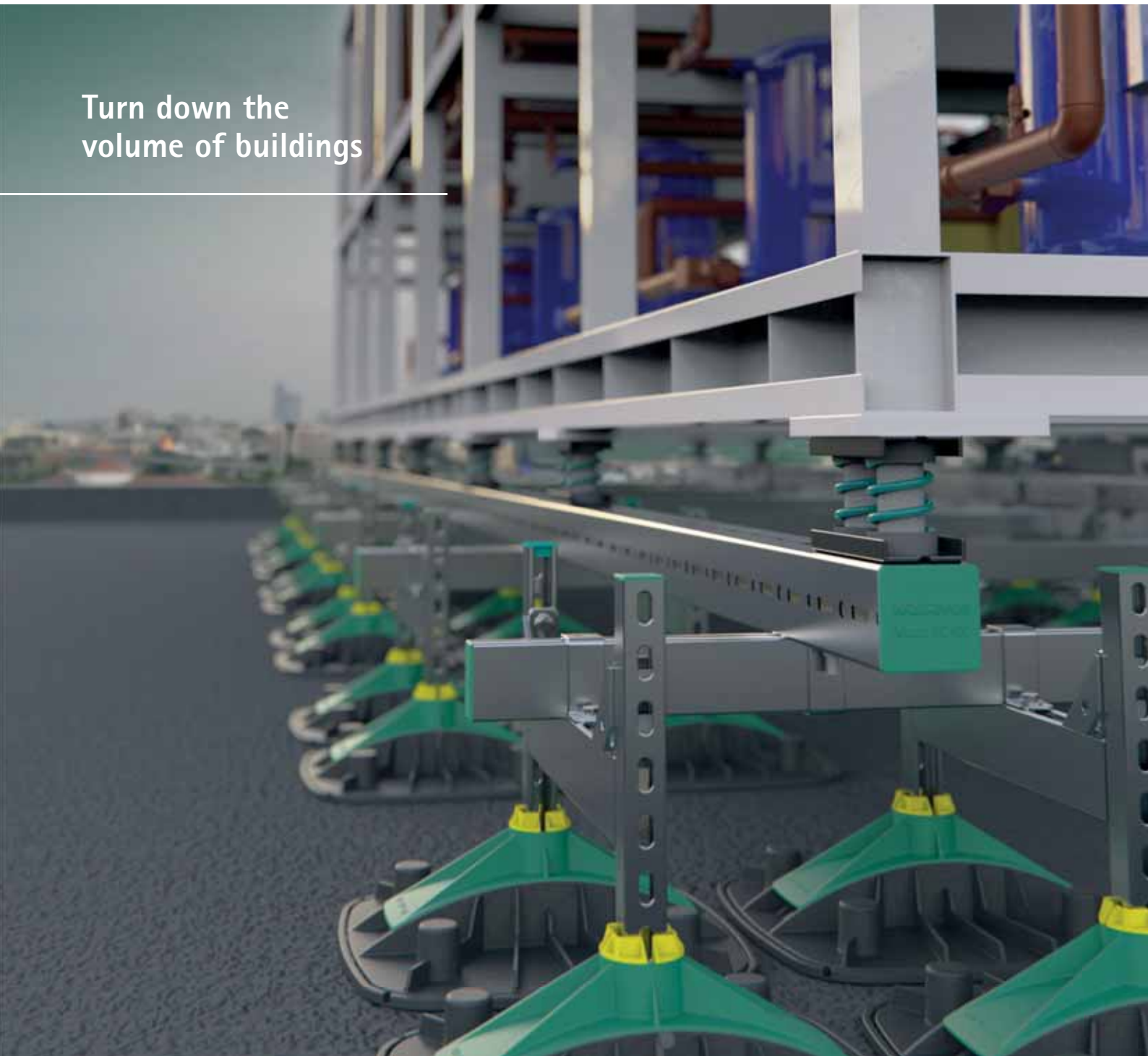


Turn down the
volume of buildings



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:

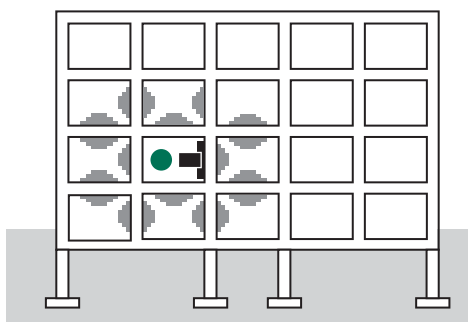
- creating discomfort for people
- safety issues for those near the vibrating equipment
- damage to the structure of the building
- increased maintenance requirements of equipment
- decreased lifetime of equipment
- incorrect operation of equipment
- violation of regulatory requirements

How to resolve vibration?

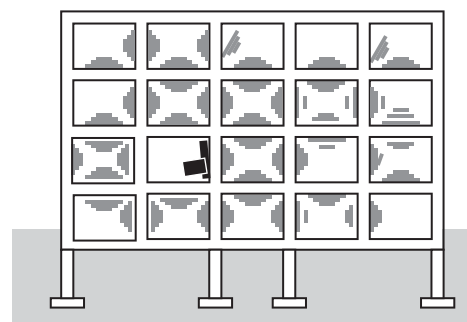
Isolating the source of vibration from the supporting structure is typically the most efficient approach to eliminate vibration. Carefully selected vibroacoustic isolators need to be placed, where possible, directly in between the mounting structure and the equipment that produces unwanted vibration. 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 airborne noise in a building



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.

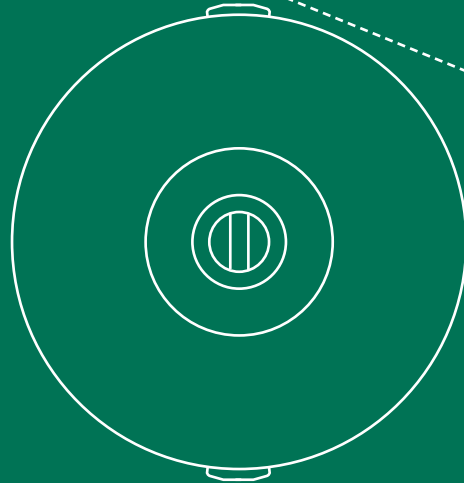
■ Special requirements

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



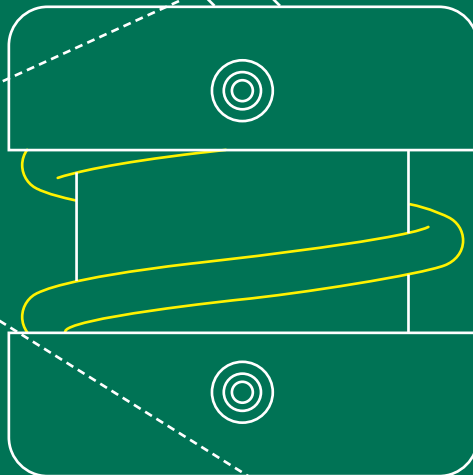
Wide range of isolators



+ High performance



+ Made in EU



+ Wide range of applications

+ Digital product data & BIM Models



9

8

11

10

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 | | Deflection (mm) | rpm Hz | Damping efficiency upon disturbing vibration (%) | | | | | | |
|------------|--------------|-------|--------------------|-----------|--|------|------|------|------|------|------|
| | (N) | (~kg) | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 |
| | | | | | 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 | |
| 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 | |
| 2800105000 | 3000 | 306 | 4.0 | | | 71 | 82 | 89 | 94 | 96 | |
| | 3250 | 331 | 2.6 | | | 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 | |
| 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 | |
| | 8000 | 815 | 4.0 | | | 46 | 71 | 82 | 89 | 94 | |

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 | | | |
| 0 | No change | Low attenuation or negative impact - contact with the Technical Sales Support Department, to get an alternative solution | | |
| Resonance | Better without insulation | | | |

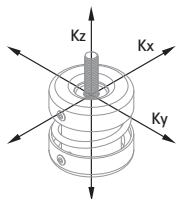
All dimensions shown are in mm, unless specified otherwise.

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



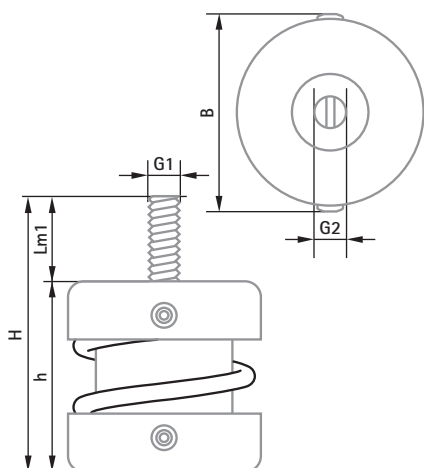
Features and Benefits

- 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 | Damping efficiency (%) | | | | | | | |
|------------|--------------|-------|-----------------|-----|------------------------|------|------|------|------|------|------|--|
| | (N) | (~kg) | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| | | | Hz | 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 | |
| | 750 | 76 | 12.0 | | 57.3 | 86.8 | 91.9 | 94.5 | 96.6 | 98.1 | 98.8 | |
| 2800201000 | 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 | |



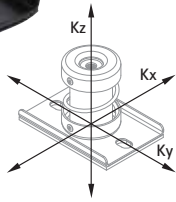
Specifications

| 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

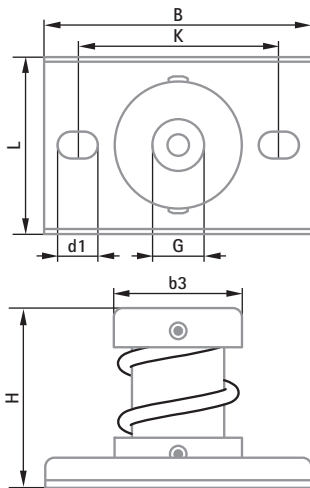


Features and Benefits

- 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 | | Elasticity module (N/mm) | Deflection (mm) | Damping efficiency upon disturbing vibration (%) | Damping efficiency upon disturbing vibration (%) | | | | | | |
|------------|--------------|-------|--------------------------|-----------------|--|--|--|------|------|------|------|------|
| | (N) | (~kg) | | | | rpm | Damping efficiency upon disturbing vibration (%) | | | | | |
| | | | | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 |
| | | | | | Hz | 8.3 | 13.3 | 16.7 | 20.0 | 25.0 | 33.3 | 41.7 |
| 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 |

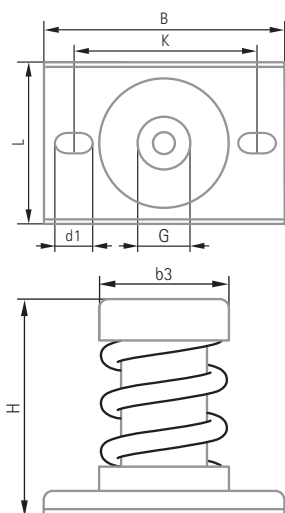
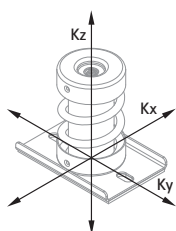


Specifications

| 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 $-90\text{ }^\circ\text{C}$ till $150\text{ }^\circ\text{C}$

Table

| Part No. | Damping efficiency upon disturbing vibration (%) | | | | | | | | | | | |
|------------|--|-------|------------|-----|------|------|------|------|------|------|------|--|
| | Applied load | | Deflection | rpm | | | | | | | | |
| | (N) | (~kg) | (mm) | Hz | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| 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 | |
| | 3000 | 306 | 25.0 | | 83.2 | 94.1 | 96.3 | 97.4 | 98.4 | 99.1 | 99.4 | |
| 2800404000 | 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 | |
| 2800405000 | 4300 | 438 | 21.5 | | 80.0 | 93.0 | 95.6 | 97.0 | 98.1 | 98.9 | 99.3 | |
| | 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 | |
| | 6000 | 612 | 25.0 | | 83.2 | 94.1 | 96.3 | 97.4 | 98.4 | 99.1 | 99.4 | |

Specifications

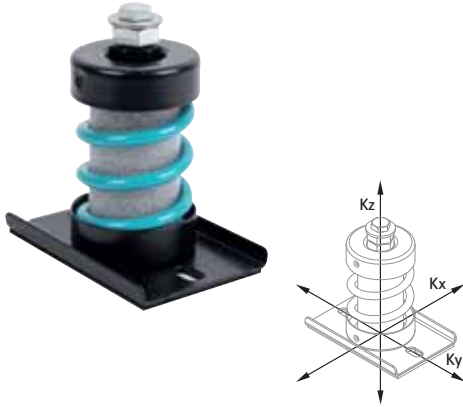
| Part No. | Dimension | Max. deflection (mm) | Min. load (N) | Max. load (N) | Spring stiffness k (N/mm) | Max. optimal load (N) | L | B | H | K | G | d1 | b3 |
|------------|-----------|----------------------|---------------|---------------|---------------------------|-----------------------|----|-----|-----|----|-----|-------|----|
| 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

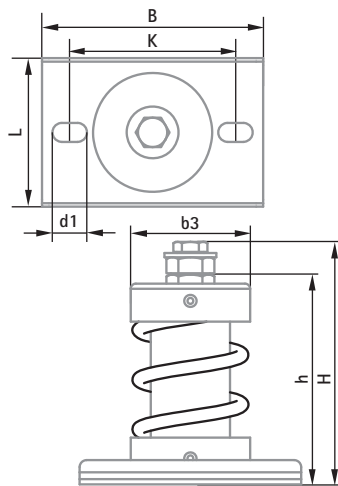
High performance spring isolator for use with A-L1 welding bracket and concrete inertia base frames

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



Damping efficiency upon disturbing vibration (%)

| Part No. | Applied load (N) | Deflection (~kg) (mm) | rpm Hz | Damping efficiency upon disturbing vibration (%) | | | | | | | |
|------------|------------------|-----------------------|--------|--|------|------|------|------|------|------|--|
| | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| 2801901000 | 800 | 82 | 20.0 | 8.3 | 13.3 | 16.7 | 20.0 | 25.0 | 33.3 | 41.7 | |
| | 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 | |
| 2801903000 | 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 | |
| | 3000 | 306 | 25.0 | 83.2 | 94.1 | 96.3 | 97.4 | 98.4 | 99.1 | 99.4 | |
| 2801904000 | 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 | |
| 2801905000 | 4300 | 438 | 21.5 | 80.0 | 93.0 | 95.6 | 97.0 | 98.1 | 98.9 | 99.3 | |
| | 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 | 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 |

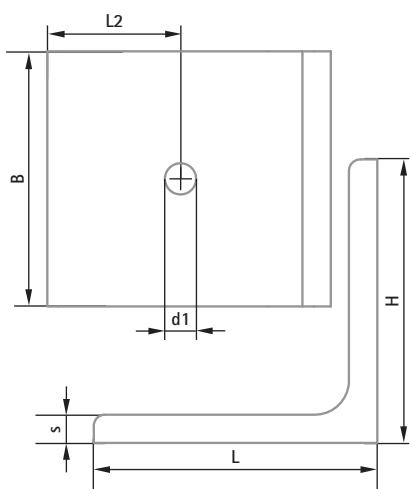
A-L1 Angle Bracket for Welding

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



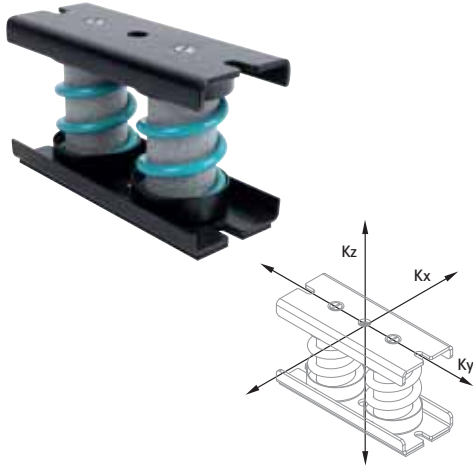
Specifications

| 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

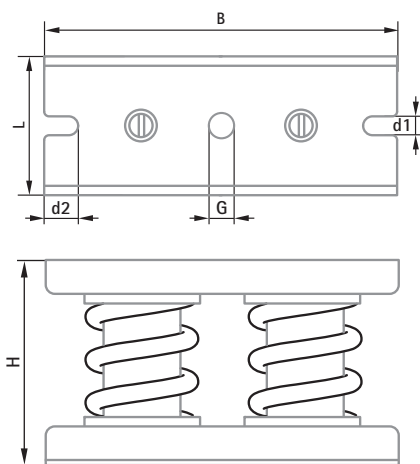
High performance spring isolator for heavy equipment



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



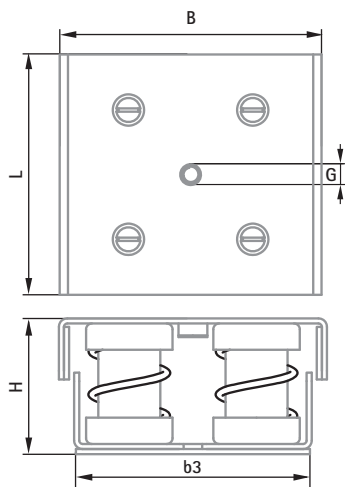
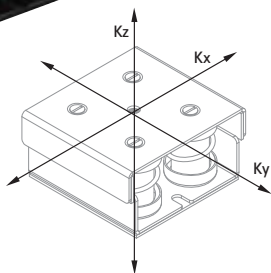
| Part No. | Damping efficiency upon disturbing vibration (%) | | | | | | | | | | | |
|------------|--|-------|-----------------|-----|------------------------|------|------|------|------|------|------|--|
| | Applied load | | Deflection (mm) | rpm | Damping efficiency (%) | | | | | | | |
| | (N) | (~kg) | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| | | | | 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 | |
| | 8000 | 815 | 25.0 | | 83.2 | 94.1 | 96.3 | 97.4 | 98.4 | 99.1 | 99.4 | |
| 2802010000 | 9000 | 917 | 22.5 | | 81.0 | 93.4 | 95.8 | 97.2 | 98.2 | 99.0 | 99.4 | |
| | 10000 | 1019 | 25.0 | | 83.2 | 94.1 | 96.3 | 97.4 | 98.4 | 99.1 | 99.4 | |
| 2802012000 | 11000 | 1121 | 22.9 | | 81.4 | 93.5 | 95.9 | 97.2 | 98.2 | 99.0 | 99.4 | |
| | 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. | Damping efficiency upon disturbing vibration (%) | | | | | | | | | | | |
|------------|--|-------|-----------------|-----|------------------------|------|------|------|------|------|------|--|
| | Applied load | | Deflection (mm) | rpm | Damping efficiency (%) | | | | | | | |
| | (N) | (~kg) | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| | | | 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 | |

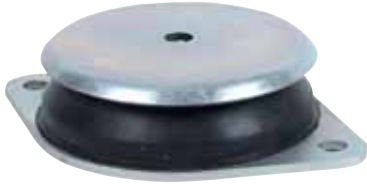
Specifications

| 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 |

Walraven VibraTek®

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

| | | Damping efficiency upon disturbing vibration (%) | | | | | | | | | |
|------------|--------------|--|------|----|-----|------|------|------|------|------|------|
| Part No. | Applied load | Deflection | rpm | | | | | | | | |
| | (N) | (~kg) | (mm) | Hz | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 |
| 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 |
| 2801801500 | 1000 | 102 | 3.7 | | | | 38.1 | 67.6 | 79.5 | 87.8 | 93.5 |
| | 1500 | 153 | 5.5 | | | | 65.8 | 80.5 | 87.2 | 92.2 | 95.7 |

Specifications

| Part No. | Dimension | Max. deflection (mm) | Min. load (N) | Max. load (N) | Spring stiffness optimal 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

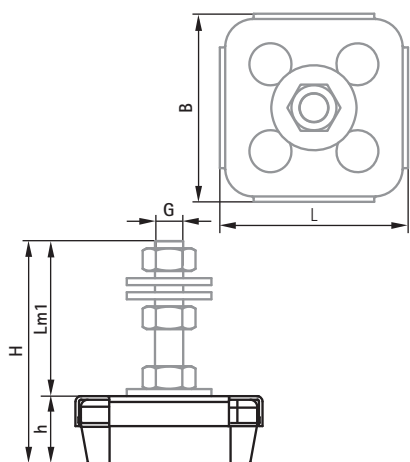


Features and Benefits

- 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 (mm) | rpm | Damping efficiency (%) | | | | | | |
| | (N) | (~kg) | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 |
| | | | 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 |

Walraven VibraTek®

MR-L Levelling Mount

Rubber mount with M10 connection for equipment isolation and levelling

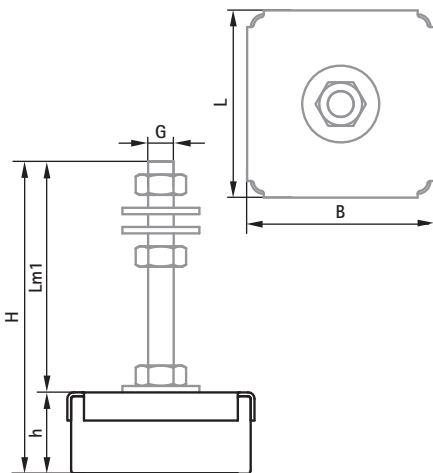


Features and Benefits

- 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 | | | | | 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 | | 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 |
|------------|-----------|----------------------|---------------|---------------|---------------------------|-----------------------|----|----|-------|-----|-----|------|
| 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

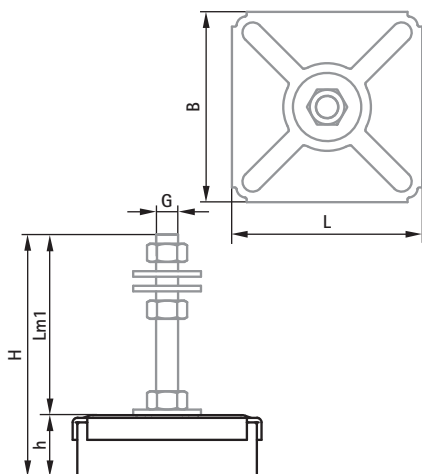


Features and Benefits

- 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. | Applied load | | Deflection (mm) | rpm | Damping efficiency upon disturbing vibration (%) | | | | | | |
|------------|--------------|-------|-----------------|-----|--|-----|------|------|------|------|------|
| | (N) | (~kg) | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 |
| | | | | | Hz | 8.3 | 13.3 | 16.7 | 20.0 | 25.0 | 33.3 |
| 2800105000 | 3250 | 331 | 2.6 | | | | 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 |

Walraven VibraTek®

MR-L Levelling Mount

Rubber mount with M16 connection for equipment isolation and levelling

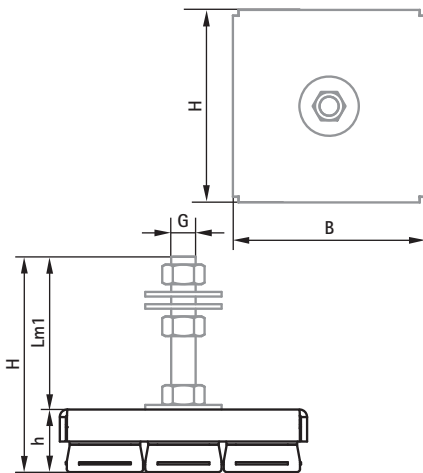


Features and Benefits

- 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 (mm) | rpm | Damping efficiency (%) | | | | | | | |
| | (N) | (~kg) | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| | | | 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

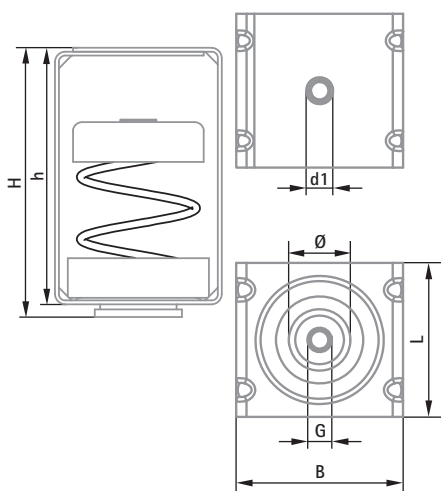


Features and Benefits

- 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. | Applied load (N) | Deflection (~kg) (mm) | rpm Hz | Damping efficiency upon disturbing vibration (%) | | | | | | | |
|------------|------------------|-----------------------|--------|--|------|------|------|------|------|------|--|
| | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| | | | | 8.3 | 13.3 | 16.7 | 20.0 | 25.0 | 33.3 | 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 | |
| | 500 | 51 | 23.0 | 81.5 | 93.5 | 95.9 | 97.2 | 98.2 | 99.0 | 99.4 | |
| 2800600750 | 600 | 61 | 18.4 | 75.8 | 91.7 | 94.9 | 96.5 | 97.8 | 98.8 | 99.2 | |
| | 750 | 76 | 23.0 | 81.5 | 93.5 | 95.9 | 97.2 | 98.2 | 99.0 | 99.4 | |
| 2800601000 | 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 | 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

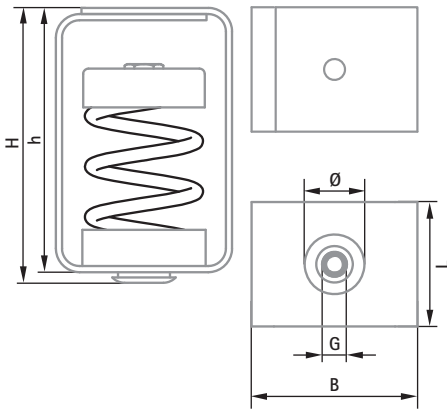


Features and Benefits

- 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. | Applied load (N) | Deflection (~kg) | Deflection (mm) | rpm Hz | Damping efficiency upon disturbing vibration (%) | | | | | | |
|------------|---------------------|---------------------|--------------------|-----------|--|------|------|------|------|------|------|
| | | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 |
| | | | | | 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 |
| | 1000 | 102 | 23.0 | | 81.5 | 93.5 | 95.9 | 97.2 | 98.2 | 99.0 | 99.4 |
| 2800701250 | 1100 | 112 | 20.2 | | 78.4 | 92.6 | 95.4 | 96.8 | 98.0 | 98.9 | 99.3 |
| | 1250 | 127 | 23.0 | | 81.5 | 93.5 | 95.9 | 97.2 | 98.2 | 99.0 | 99.4 |
| 2800701500 | 1400 | 143 | 21.5 | | 79.9 | 93.0 | 95.6 | 97.0 | 98.1 | 98.9 | 99.3 |
| | 1500 | 153 | 23.0 | | 81.5 | 93.5 | 95.9 | 97.2 | 98.2 | 99.0 | 99.4 |
| 2800702000 | 1750 | 178 | 18.3 | | 75.6 | 91.7 | 94.8 | 96.5 | 97.8 | 98.8 | 99.2 |
| | 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 |
| 2800703000 | 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 |
| 2800704000 | 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 |
| | 4000 | 408 | 23.0 | | 81.5 | 93.5 | 95.9 | 97.2 | 98.2 | 99.0 | 99.4 |
| 2800705000 | 5250 | 535 | 24.2 | | 82.5 | 93.8 | 96.1 | 97.4 | 98.3 | 99.1 | 99.4 |
| | 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 |
| | 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

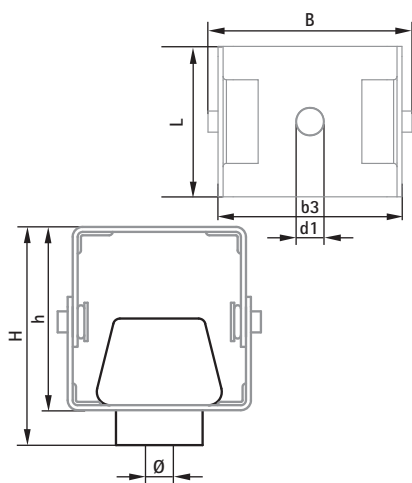
Features and Benefits



- 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) | Elasticity module (N/mm) | Deflection (mm) | rpm | Damping efficiency upon disturbing vibration (%) | | | | | | |
|------------|------------------------|--------------------------|-----------------|------|--|------|------|------|------|------|------|
| | | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 |
| 2800800300 | 200 | 20 | 4.7 | 8.3 | 57.0 | 76.2 | 84.6 | 90.7 | 94.9 | 96.8 | |
| | 250 | 25 | 5.8 | 13.3 | 68.3 | 81.8 | 88.0 | 92.7 | 96.0 | 97.5 | |
| | 300 | 31 | 42.86 | 16.7 | 74.9 | 85.3 | 90.2 | 94.0 | 96.7 | 97.9 | |
| 2800800450 | 350 | 36 | 5.3 | 20.0 | 63.9 | 79.6 | 86.6 | 91.8 | 95.6 | 97.2 | |
| | 400 | 41 | 6.0 | 25.0 | 69.8 | 82.6 | 88.5 | 92.9 | 96.1 | 97.6 | |
| | 450 | 46 | 66.18 | 33.3 | 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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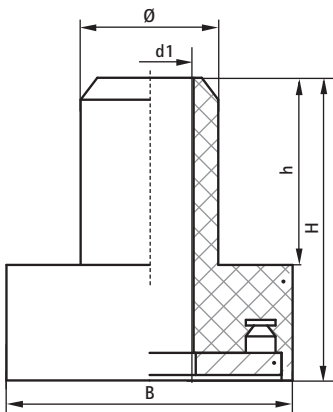
SA-1 Silent Absorber

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 \varnothing 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 |

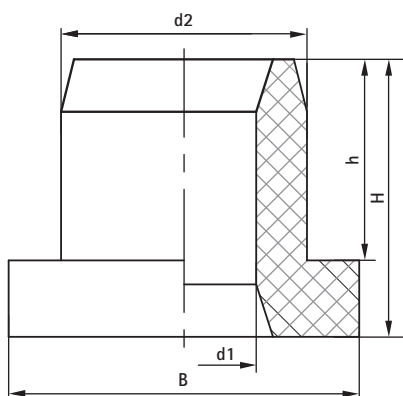
SA-2 Silent Absorber

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 |

Walraven VibraTek®

SA-3 Silent Absorber

Silent rubber absorber for isolating metal to metal contact

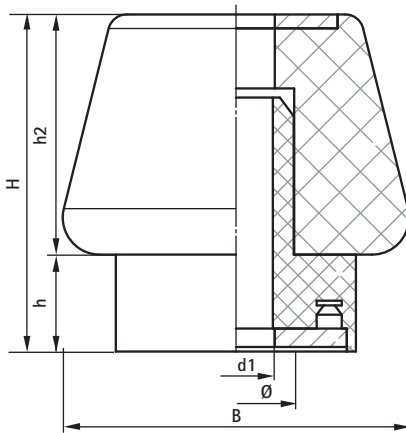


Features and Benefits

- 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

| Part No. | Applied load (N) | Deflection (~kg) (mm) | rpm Hz | Damping efficiency upon disturbing vibration (%) | | | | | | | |
|------------|---------------------|--------------------------|-----------|--|------|------|------|------|------|------|--|
| | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| | | | | 8.3 | 13.3 | 16.7 | 20.0 | 25.0 | 33.3 | 41.7 | |
| 2800800300 | 200 | 20 | 2.3 | | | 37.5 | 63.5 | 79.4 | 89.4 | 93.4 | |
| | 250 | 25 | 2.9 | | 7.4 | 55.5 | 72.8 | 84.2 | 91.7 | 94.8 | |
| | 300 | 31 | 3.5 | | 33.1 | 65.5 | 78.3 | 87.1 | 93.1 | 95.7 | |
| 2800800450 | 350 | 36 | 3.1 | | 17.9 | 59.5 | 74.9 | 85.3 | 92.2 | 95.2 | |
| | 400 | 41 | 3.6 | | 34.9 | 66.2 | 78.7 | 87.4 | 93.3 | 95.8 | |
| | 450 | 46 | 4.0 | | 46.0 | 71.1 | 81.5 | 88.9 | 94.1 | 96.3 | |



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

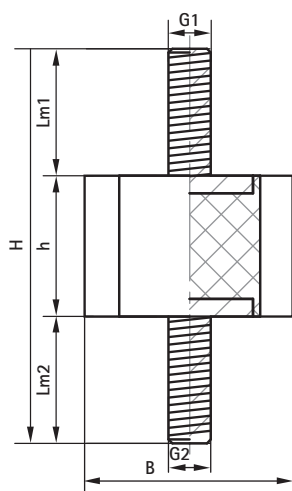
A rubber silentblock with two external threads



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 (N) | Deflection (~kg) (mm) | rpm Hz | Damping efficiency upon disturbing vibration (%) | | | | | | | | | |
|------------|------------------|-----------------------|--------|--|-----|------|------|------|------|------|------|------|------|
| | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | | | |
| 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 |

Walraven VibraTek®

SB-MF Silentblock

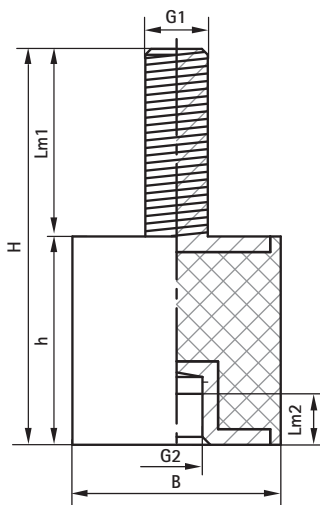
A rubber silentblock with an external and internal thread



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. | Applied load (N) | Deflection (~kg) | rpm (mm) | 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 | | |
| | | | | | | | | | | | Hz | 8.3 |
| 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

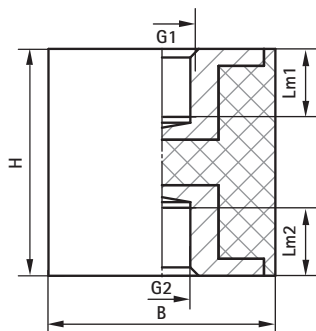
A rubber silentblock with two internal threads



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) | rpm | Damping efficiency (%) | | | | | | | | |
| | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | | |
| | | | Hz | 8.3 | 13.3 | 16.7 | 20.0 | 25.0 | 33.3 | 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 | 92.3 | | |
| 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 | 92.3 | | |
| 2801600420 | 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 | |
| 2801600750 | 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 | | |
| | 750 | 76 | 4.0 | | 46.0 | 71.1 | 81.5 | 88.9 | 94.1 | 96.3 | | |
| 2801601170 | 1000 | 102 | 3.4 | | | | 30.4 | 64.4 | 77.7 | 86.8 | 93.0 | 95.6 |
| | 1170 | 119 | 4.0 | | | | 46.0 | 71.1 | 81.5 | 88.9 | 94.1 | 96.3 |
| 2801601690 | 1200 | 122 | 2.8 | | | 2.5 | 53.8 | 71.9 | 83.7 | 91.4 | 94.7 | |
| | 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 | 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 |

Walraven VibraTek®

SB-M Silentblock

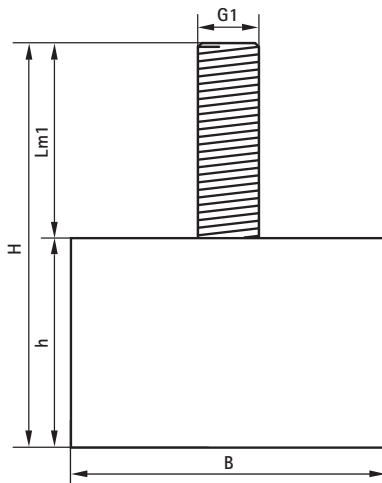
A rubber silentblock with one external thread



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. | Applied load (N) | Deflection (~kg) | rpm (mm) | Hz | Damping efficiency upon disturbing vibration (%) | | | | | | | |
|------------|---------------------|---------------------|-------------|----|--|------|------|------|------|------|------|------|
| | | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | |
| | | | | | 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 | |
| | 750 | 76 | 4.0 | | | 46.0 | 71.1 | 81.5 | 88.9 | 94.1 | 96.3 | |
| 2801701170 | 1000 | 102 | 3.4 | | | | 30.4 | 64.4 | 77.7 | 86.8 | 93.0 | 95.6 |
| | 1170 | 119 | 4.0 | | | | 46.0 | 71.1 | 81.5 | 88.9 | 94.1 | 96.3 |
| 2801701690 | 1200 | 122 | 2.8 | | | | 2.5 | 53.8 | 71.9 | 83.7 | 91.4 | 94.7 |
| | 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



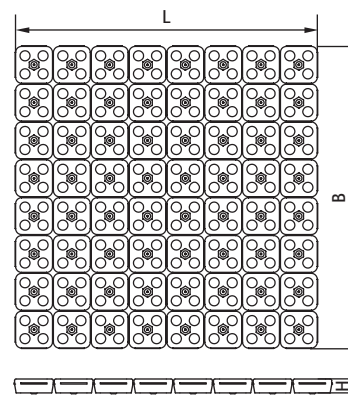
- Ideal for use as an elastic isolating support for equipment and metal structures
- Supplied as a mat of 64 blocks (8 x 8) joined by a membrane
- Individual 50 x 50 mm pieces can be easily cut to form required support shape
- Transforms to elastic base support when used with a hexagon head screw
- Reusable 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. | Applied load (N) | Elasticity module (N/mm) | Deflection (mm) | rpm Hz | Damping efficiency upon disturbing vibration (%) | | | | | | | | | | |
|--|---------------------|--------------------------------|--------------------|-----------|--|------|------|------|------|------|------|------|------|------|------|
| | | | | | 500 | 800 | 1000 | 1200 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 |
| | | | | | 8.3 | 13.3 | 16.7 | 20.0 | 25.0 | 33.3 | 41.7 | 50.0 | 58.3 | 66.7 | 75.0 |
| 2801200400 | 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 |
| | 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 | 99 |
| | 1200 | 122 | 250 | 4.8 | | 59 | 77 | 85 | 91 | 95 | 97 | 98 | 98 | 99 | 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 | 99 |
| | 1200 | 122 | 125 | 9.6 | | 40 | 83 | 90 | 93 | 96 | 98 | 98 | 99 | 99 | 100 |

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®

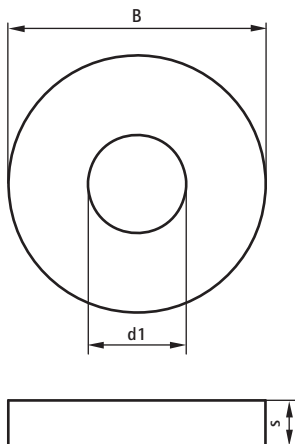
SA-W Silent Washer

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



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

| 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 |
| Application range | 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 | |
|---|--|----------------------|---|
| <ul style="list-style-type: none"> Walraven VibraTek® MS-M Spring Mount Walraven VibraTek® HR-1 Rubber Hanger | White zinc plating | C1 |  |
| <ul style="list-style-type: none"> Walraven VibraTek® MS-1 Spring Mount Walraven VibraTek® MS-1X Spring Mount | Body: 1. 1 st zinc plated 2. 2 nd Protection Epoxy polyester Springs: 3. 1 st passivated initial and/or primer 4. 2 nd Protection Epoxy polyester | C4 |  |
| <ul style="list-style-type: none"> Walraven VibraTek® MR-L Rubber Levelling Mount Walraven VibraTek® HS-1 Spring Hanger | | |  |
| <ul style="list-style-type: none"> Walraven VibraTek® HS-1X Spring Hanger Walraven VibraTek® MS-1X-CBL Spring Mount | | |  |
| <ul style="list-style-type: none"> Walraven VibraTek® MS-2X Spring Mount Walraven VibraTek® MS-4 Spring Mount | | |  |

For further details please contact us: 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.

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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