AVM

Spring vibration dampers
Rubber and steel

BODY AND NO-SLIP COATING
NBR rubber.
Hardness 60 Shore A ±5.

SPRING AND PLATE
Zinc-plated steel.

SPRING CAPS
Aluminium.

FEATURES AND APPLICATIONS
AVM vibration dampers comprise a body and a non-slip coating fixed to the lower part with a zinc-plated screw, and a spring on which two caps with pass-through holes at the ends are fixed.
They are generally used for vibration isolation in compression.
Vibrations can cause:
- malfunctioning and reduction of the machine lifespan and/or of the adjacent ones;
- damage to health;
- noise.
They are particularly suitable for use with HVAC, compressors, refrigeration units, centrifuges, crushers, vibrating screens and generators.
See High performance vibration dampers - Features and guidelines for the choice (on page -).

SPECIAL EXECUTIONS ON REQUEST
- Spring vibration dampers with pins or threaded holes without a baseplate.
- Spring vibration dampers with two plates.
- Spring vibration dampers with one or two plates and pins for transport.
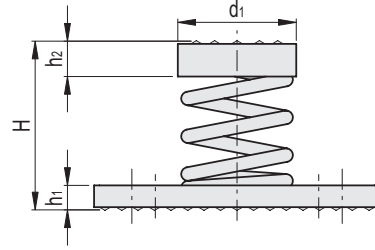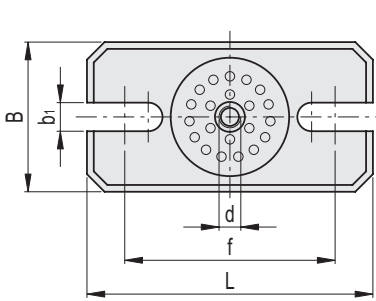
Code	Description	B	L	H	d	d1	b1	h1	h2	f±5*	Min. load [N]	Max. load [N]	Min. deflection [mm]	Max. deflection [mm]	⚖
480121	AVM-50-13	55	105	62	M8	43.5	10.5	9	13	75	50	130	5	15	360
480123	AVM-50-25	55	105	62	M8	43.5	10.5	9	13	75	80	250	5	15	370
480125	AVM-50-35	55	105	62	M8	43.5	10.5	9	13	75	120	350	5	15	380
480127	AVM-50-50	55	105	62	M8	43.5	10.5	9	13	75	180	500	5	15	400
480129	AVM-50-80	55	105	62	M8	43.5	10.5	9	13	75	270	800	5	15	380
480131	AVM-50-115	55	105	62	M8	43.5	10.5	9	13	75	400	1150	5	15	430
480133	AVM-50-135	55	105	62	M8	43.5	10.5	9	13	75	450	1350	5	15	420
480135	AVM-50-155	55	105	62	M8	43.5	10.5	9	13	75	600	1550	5	13	450
480137	AVM-50-200	55	105	62	M8	48	10.5	9	18	75	850	2000	5	12	470
480141	AVM-80-15	55	105	92	M8	43.5	10.5	9	13	75	80	150	10	20	360
480143	AVM-80-35	55	105	92	M8	43.5	10.5	9	13	75	150	350	10	20	370
480145	AVM-80-55	55	105	92	M8	43.5	10.5	9	13	75	270	550	10	20	380
480147	AVM-80-80	55	105	92	M8	43.5	10.5	9	13	75	400	800	10	20	400
480149	AVM-80-100	55	105	92	M8	43.5	10.5	9	13	75	500	1000	10	20	490
480151	AVM-80-140	55	105	92	M8	43.5	10.5	9	13	75	700	1400	10	20	450
480153	AVM-80-175	55	105	92	M8	43.5	10.5	9	13	75	900	1750	10	20	490
480155	AVM-80-215	55	105	92	M8	48	10.5	9	18	75	1050	2150	10	20	530
480157	AVM-80-350	55	105	92	M8	48	10.5	9	18	75	1750	3500	10	20	610
480159	AVM-80-510	55	105	92	M8	48	10.5	9	18	75	3400	5100	10	15	650

* Fixing holes centre distance.

The min. load is the value below which the vibration damper is not able to isolate the vibrations as it would be too rigid.

The max load is the value beyond which some type of failure may occur compromising the functionality of the vibration damper.

The min.deflection is the compression of the vibration-damping support corresponding to the min. load.

The max.deflection is the compression of the vibration-damping support corresponding to the max. load.

HIGH PERFORMANCE VIBRATION DAMPERS

General information

High performance vibration dampers are used in compliance with safety regulations on vibrations and noise (DL 81/2008). The use of this product range allows: to prevent damage to structures, to preserve the correct operation of sensitive equipment, to reduce noise.

Features

AVC:

- High static deflection, low resonance frequency and high vibration isolation.
- High damping factor, also suitable for unbalanced machines.
- Suitable for use with with compression, traction and shear.
- Suitable for applications where impacts and shocks may occur.
- Structure fully made out of stainless steel, resistant to flames, high temperatures and corrosion.

AVM:

- High static deflection depending on height, low resonance frequency and high vibration isolation
- No damping factor, therefore not suitable for unbalanced machines.
- Suitable for use with with compression.
- Stainless steel springs must be used for temperatures below +5°C (special execution on request).

AVG:

- Good static deflection, low resonance frequency and good vibration isolation.
- High damping factor, also suitable for unbalanced machines.
- Suitable for use with with compression and traction.
- High safety degree: even in the case of the combustion of rubber resilient, the inner pin cannot come out of the structure and keeps the equipmnent securely suspended.

Guidelines for the choice

Analysis of the static tests to select the appropriate vibration damper.

Basic data required:

- The static load applied to each vibration damping element (acting on each support point).
- Disturbing frequency to be reduced and the desired isolation percentage.

How to choose the vibration-damping element:

- With reference to the diagram for the check of the degree of isolation, locate the corresponding static deflection required to obtain the desired isolation.
- Select the product with the required static deflection depending on acting load.

Example:

Consider an application with the following features:
- Static load on each support: 1400 N
- Frequency to be isolated: 1.200 rpm = 20 Hz
- Required isolation: 90% at 20 Hz

For vibration dampers without damping e.g. AVM, the following diagram for checking the isolation degree shows that a static deflection of at least 7 mm is required to obtain 90% isolation of the 20 Hz frequency, In case of damping, the isolation percentage may vary, it is advisable to contact the Elesa Technical Department.

HIGH PERFORMANCE VIBRATION DAMPERS

Diagram for checking the isolation degree of the vibration-damping element
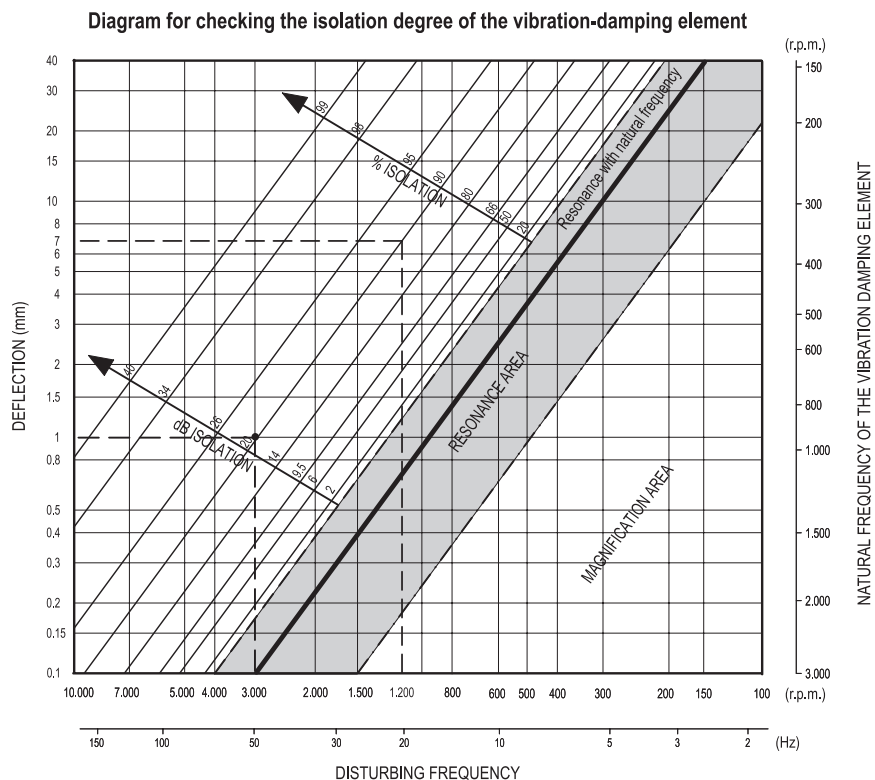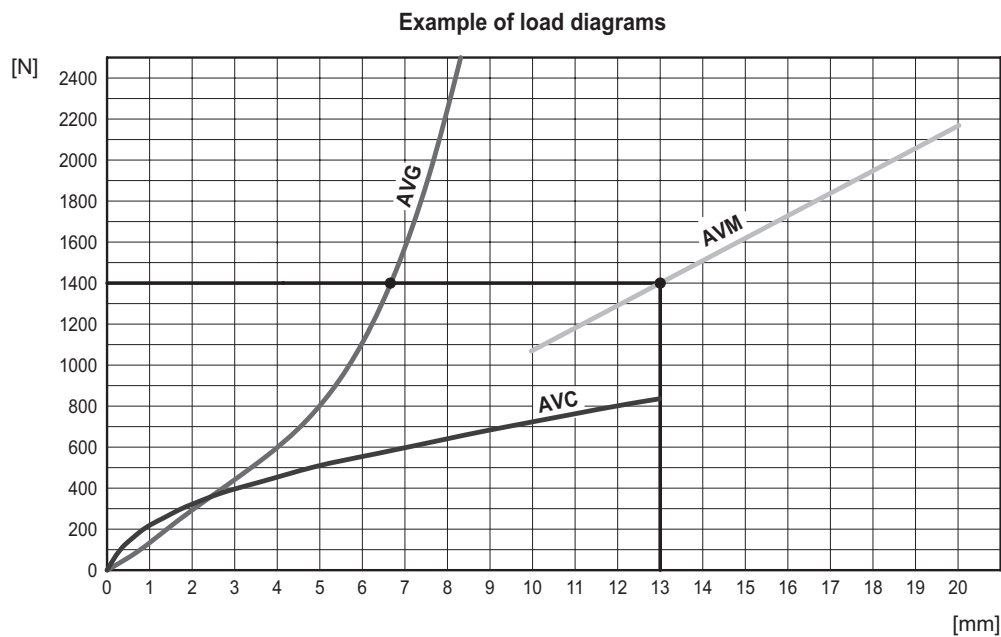

With reference to the graph below the products that intersect the 1400 N line are: AVG, AVM.
For the 1400 N load, the expected static deflections are:

- AVG: 6.5 mm (< 7 mm) = approximately 88% isolation at 20 Hz
- AVM: 13 mm (< 7 mm) = approximately 95% isolation at 20 Hz

Consequently, the most suitable product with the best isolation degree is AVM.

Example of load diagrams

HIGH PERFORMANCE VIBRATION DAMPERS

Simplified diagram for the check of the degree of isolation of a vibration damper

Defl. [mm]	f0v [Hz]	Isolation %															
1	15.9	-1%	-5%	-11%	-21%	-38%	-65%	-116%	-235%	-795%	-935%	-73%	32%	70%	89%	94%	96%
1.5	13.0	-2%	-7%	-17%	-36%	-70%	-145%	-416%	-1795%	-201%	-55%	27%	63%	82%	93%	96%	98%
2	11.3	-2%	-10%	-25%	-54%	-121%	-375%	-1239%	-148%	-29%	16%	54%	75%	87%	95%	97%	98%
2.5	10.1	-3%	-12%	-33%	-78%	-218%	-7569%	-191%	-33%	18%	43%	66%	81%	90%	96%	98%	99%
3	9.2	-3%	-15%	-42%	-111%	-463%	-442%	-63%	10%	40%	56%	73%	84%	92%	97%	98%	99%
4	8.0	-5%	-21%	-65%	-235%	-935%	-73%	13%	45%	61%	70%	81%	89%	94%	97%	99%	99%
5	7.1	-6%	-28%	-97%	-715%	-170%	-3%	41%	60%	71%	78%	85%	91%	95%	98%	99%	99%
6	6.5	-7%	-36%	-145%	-1795%	-55%	27%	55%	69%	77%	82%	88%	93%	96%	98%	99%	99%
7	6.0	-8%	-44%	-223%	-338%	-9%	43%	64%	74%	81%	85%	90%	94%	97%	99%	99%	99%
8	5.6	-10%	-54%	-375%	-148%	16%	54%	70%	78%	84%	87%	91%	95%	97%	99%	99%	Max
10	5.0	-12%	-78%	-7569%	-33%	43%	66%	77%	83%	87%	90%	93%	96%	98%	99%	99%	Max
12	4.6	-15%	-111%	-442%	10%	56%	73%	82%	87%	90%	92%	94%	97%	98%	99%	Max	Max
14	4.3	-18%	-159%	-162%	31%	65%	78%	85%	89%	91%	93%	95%	97%	98%	99%	Max	Max
16	4.0	-21%	-235%	-73%	45%	70%	81%	87%	90%	92%	94%	96%	97%	99%	99%	Max	Max
18	3.8	-25%	-375%	-29%	54%	75%	84%	88%	91%	93%	95%	96%	98%	99%	99%	Max	Max
20	3.6	-28%	-715%	-3%	60%	78%	85%	90%	92%	94%	95%	97%	98%	99%	99%	Max	Max
22	3.4	-32%	-2759%	15%	65%	80%	87%	91%	93%	95%	96%	97%	98%	99%	Max	Max	Max
25	3.2	-38%	-935%	32%	70%	83%	89%	92%	94%	95%	96%	97%	98%	99%	Max	Max	Max
30	2.9	-49%	-217%	49%	77%	86%	91%	93%	95%	96%	97%	98%	99%	99%	Max	Max	Max
32	2.8	-54%	-148%	54%	78%	87%	91%	94%	95%	96%	97%	98%	99%	99%	Max	Max	Max
35	2.7	-62%	-87%	59%	81%	88%	92%	94%	96%	97%	97%	98%	99%	99%	Max	Max	Max
40	2.5	-78%	-33%	66%	83%	90%	93%	95%	96%	97%	98%	98%	99%	99%	Max	Max	Max
45	2.4	-97%	-3%	71%	85%	91%	94%	96%	97%	97%	98%	99%	99%	99%	Max	Max	Max
50	2.3	-121%	16%	75%	87%	92%	95%	96%	97%	98%	98%	99%	99%	Max	Max	Max	Max
55	2.1	-152%	29%	77%	88%	93%	95%	96%	97%	98%	98%	99%	99%	Max	Max	Max	Max
60	2.1	-192%	39%	80%	90%	94%	96%	97%	98%	98%	98%	99%	99%	Max	Max	Max	Max
70	1.9	-330%	52%	83%	91%	95%	96%	97%	98%	98%	99%	99%	99%	Max	Max	Max	Max
80	1.8	-715%	60%	85%	92%	95%	97%	98%	98%	99%	99%	99%	99%	Max	Max	Max	Max
90	1.7	-7569%	66%	87%	93%	96%	97%	98%	98%	99%	99%	99%	Max	Max	Max	Max	Max
100	1.6	-935%	70%	89%	94%	96%	97%	98%	99%	99%	99%	99%	Max	Max	Max	Max	Max
150	1.3	-55%	82%	93%	96%	98%	98%	99%	99%	99%	99%	Max	Max	Max	Max	Max	Max
200	1.1	16%	87%	95%	97%	98%	99%	99%	99%	99%	Max	Max	Max	Max	Max	Max	Max
RPM		100	200	300	400	500	600	700	800	900	1000	1200	1500	2000	3000	4000	5000
[Hz]		1.7	3.3	5.0	6.7	8.3	10.0	11.7	13.3	15.0	16.7	20.0	25.0	33.3	50.0	66.7	83.3

	No isolation		Minimum isolation		Average isolation
	Resonance		Modest isolation		High isolation