

Levelling feet with vibration damping element

SPECIFICATION

Types

- Type **A**: with two-hole flange ($d_1 = 60 / 90 / 113$)
- Type **B**: with four-hole flange ($d_1 = 113 / 126$)

Identification no.

- No. **1**: without tear-off lock
- No. **2**: with tear-off lock

Vibration damping element
Natural rubber (NR)

vulcanized
temperature resistant up to 80 °C
Hardness Shore A $\pm 5^\circ$

soft 43
medium 57
hard 68

Sheet metal
zinc plated, blue passivated

Threaded insert
Steel
zinc plated, blue passivated



ACCESSORY

- Rubber pads GN 148.2 (see page 1307)

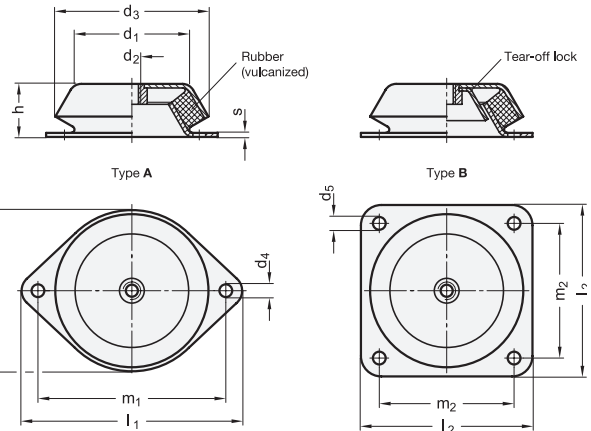
INFORMATION

Levelling feet GN 148 are designed for setting up heavy machinery and units with insulation against vibrations.

This has a positive impact on the lifetime of machines and additionally reduces the noise pollution.

The structure is such that horizontal forces are also absorbed. The design with tear-off lock (Type 2) protects the levelling feet from destruction caused by tear-off under excessive tension loads.

The details relating to the load bearing capacity are non-binding recommended values and rule out any liability. They constitute no general warranty of quality and condition. The user must determine from case to case whether a product is suitable for the intended use.



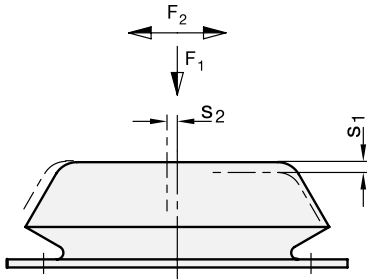
* Complete with Identification no. of the Levelling feet (1 or 2)

- | | |
|-----------------------|--------------------|
| 1 | 2 |
| without tear-off lock | with tear-off lock |

GN 148

Description	d1	d2	d3	d4	d5	h	s	b	l1	l2	m1	m2	⚖
GN 148-60-M10-A-*-43	60	M 10	78	9	-	30	2	78	128	-	110	-	238
GN 148-60-M10-A-*-57	60	M 10	78	9	-	30	2	78	128	-	110	-	250
GN 148-60-M10-A-*-68	60	M 10	78	9	-	30	2	78	128	-	110	-	245
GN 148-90-M12-A-*-43	90	M 12	106	13	-	39	3	110	170	-	140	-	717
GN 148-90-M12-A-*-57	90	M 12	106	13	-	39	3	110	170	-	140	-	725
GN 148-90-M12-A-*-68	90	M 12	106	13	-	39	3	110	170	-	140	-	730
GN 148-113-M16-A-*-43	113	M 16	150	12.5	-	52	4	150	216	-	184	-	1643
GN 148-113-M16-A-*-57	113	M 16	150	12.5	-	52	4	150	216	-	184	-	1641
GN 148-113-M16-A-*-68	113	M 16	150	12.5	-	52	4	150	216	-	184	-	1713
GN 148-113-M16-B-*-43	113	M 16	150	-	12.5	52	4	-	-	168	-	132	1878
GN 148-113-M16-B-*-57	113	M 16	150	-	12.5	52	4	-	-	168	-	132	1830
GN 148-113-M16-B-*-68	113	M 16	150	-	12.5	52	4	-	-	168	-	132	1870
GN 148-126-M20-B-*-43	126	M 20	177	-	13	63	4	-	-	184	-	150	2613
GN 148-126-M20-B-*-57	126	M 20	177	-	13	63	4	-	-	184	-	150	2623
GN 148-126-M20-B-*-68	126	M 20	177	-	13	63	4	-	-	184	-	150	2680

Weight identification no. 1



TECHNICAL INFORMATION (TERMS)

F_1 = static load in vertical direction (pressure)

F_2 = static load in horizontal direction (lateral thrust)

s_1 = Compression in vertical direction (spring excursion) under load through F_1

s_2 = Compression in vertical direction (spring excursion) under load through F_2

Stiffness R:

is the load which causes the damping elements to be compressed by 1 mm (spring rate)

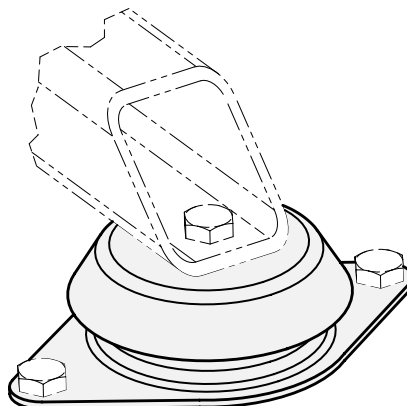
Equation for calculating the stiffness: $R = F / S$

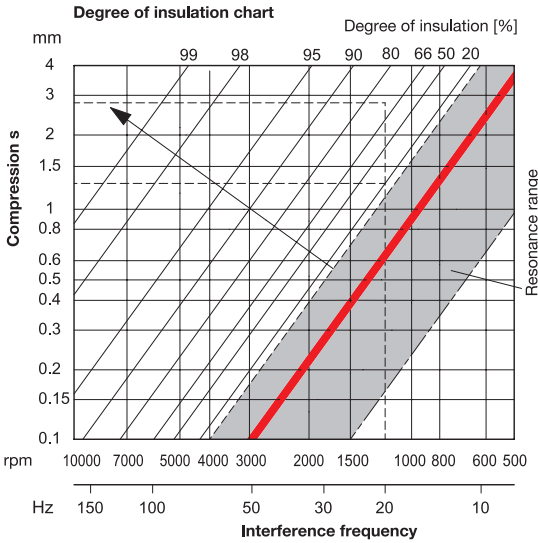
The table below gives details on the maximum static load F, the maximum rated compression and the resulting stiffness R.

The method shown and the values given below allow the maximum degree of insulation of the vibration to be determined as a factor of the interference frequency.

d1	Hardness in Shore	max. static load F1 in N	Stiffness R1 in N/mm	max. compression s1, in mm	max. static load F2 in N	Stiffness R2 in N/mm	max. compression s2 in mm
60	43	1100	340	3.2	2300	770	3
60	57	1750	550	3.2	3400	1130	3
60	68	2800	930	3	4000	1330	3
90	43	1500	430	3.5	3000	750	4
90	57	2800	800	3.5	5000	1330	3.75
90	68	4500	1290	3.5	7000	1870	3.75
113	43	3500	1000	3.5	4500	1290	3.5
113	57	6500	1860	3.5	7500	2140	3.5
113	68	10000	2860	3.5	11000	3140	3.5
126	43	7500	2140	3.5	9000	2570	3.5
126	57	12500	3570	3.5	15000	4290	3.5
126	68	19000	5340	3.5	22500	6430	3.5

EXAMPLE OF APPLICATION





Terms

- Interference frequency [Hz]: is the frequency emanating from a machine, e.g. the machine main shaft speed [rpm].
- Static load F [N]: is the load acting on each vibration-damping element (levelling foot).
- Degree of insulation [%]: is the measure for absorbing the interference frequency (damping).
- Compression s [mm]: is the change in height of the damping element (spring excursion).
- Stiffness R [N/mm]: is the load which causes a damping element to be compressed by 1 mm (spring rate).

Determining the suitable levelling foot and the maximum degree of insulation

First, the static load F for each levelling foot must be determined. For well arranged levelling feet and the resulting even distribution of the load F, the static load is calculated using the following equation:

$$\text{Weight force of the machine [N]} / \text{Number of levelling feet} = \text{Static load F [N]} / \text{per levelling foot}$$

Once the static load F has been calculated, select a levelling foot from the table. Please note that the static load F should be as close as possible to the static load capacity, but without exceeding it. The associated stiffness R of the selected leg is also shown in the table.

The actual compression is then calculated using the equation below.

$$\text{Static load F [N]} / \text{per levelling foot} / \text{Stiffness R [N/mm]} = \text{actual compression s [mm]}$$

Starting from the actual compression s calculated, the maximum degree of insulation as factor of the interference frequency can now be read in the above chart.

To optimise the maximum degree of insulation, change the number of feet such that the static load F of each levelling foot is as close as possible below a static load capacity value given in the table. This will increase the compression s which, in turn, improves the degree of insulation.

In general, medium and high frequencies can be very well insulated with an adequate compression.