



Ceiling , Wall & General Isolation Resilient Hangers

CDM-ISO-PHS/PHR Resilient Hangers are designed to suspend heavy ceilings, walls, lighting rigs, ducts and pipe work. By isolating these elements from the main structure, sound isolation and vibration isolation is maximized.

The choice between **CDM-ISO-PHS** and **CDM-ISO-PHR** depends on the required resonance frequency. To determine a specific type of **PHS/PHR** hanger, the load must be considered.

CDM-ISO-PHR



CDM-ISO-PHS

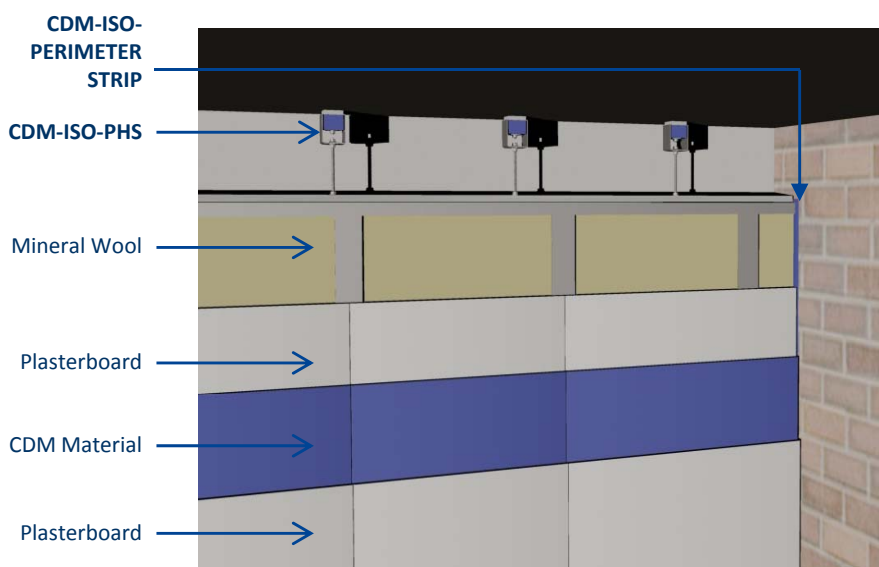


f_{res} [Hz]	Type	Optimal load per element [lbf]
8 – 10 Hz	ISO-PHS-150	35 (min: 22 – max: 56)
	ISO-PHS-500	112 (min: 56 – max: 135)
	ISO-PHS-1000	225 (min: 135 – max: 300)
	ISO-PHS-1400	270 (min: 225 – max: 400)
4 – 5 Hz	ISO-PHR-80	18 (min: 10 – max: 25)
	ISO-PHR-150	35 (min: 25 – max: 40)
	ISO-PHR-250	56 (min: 40 – max: 90)
	ISO-PHR-500	112 (min: 90 – max: 145)
	ISO-PHR-1000	225 (min: 145 – max: 270)

Hangers can be manufactured to take any load and to achieve other natural frequencies on request (e.g. 3 Hz spring hangers).

CDM-ISO-PERIMETER-STRIP should be used around the perimeter of the suspended wall or ceiling to ensure that they are acoustically decoupled from the supporting structures.

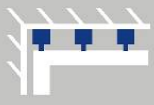
Example: Installation of a CDM-ISO-PHS wall



- Required Data for Design:**
- Required performance (insertion loss or natural frequency)
 - Imposed permanent and temporary loads
 - Contact surface (type and dimensions)

CDM-ISO-WALL/CEILING





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FIELD OF APPLICATION

CDM-ISO-PHS/PHR suspensions are used to resiliently suspend ceilings or heavy structures such as a wall, HVAC or lighting equipment to a structural deck. This way, the transmission of structure-borne noise and vibrations can effectively be reduced.

DESCRIPTION

CDM-ISO-PHS/PHR hangers consist of a galvanized steel frame (1) into which an isolator element (2) is positioned; the isolator element can be a spring (PHR) or an elastomer in CDM-SOLIDS (PHS). The force is distributed over the isolator by means of a steel washer (3). In case of a spring isolator, soundstop layers in corkelastomer (5) are installed above and below the spring to avoid steel-on-steel contact. Elastomers resonate at 8 to 10 Hz, and springs resonate at approximately 4 to 5 Hz. All elements are glued together. At the top of the frame, a small corkelastomer pad (4) decouples the steel frame and the structural ceiling. The hanger can also be spaced off the structural deck using threaded rod.

The following units are standard:

CDM-ISO-PHS Elastomers (CDM-SOLIDS):

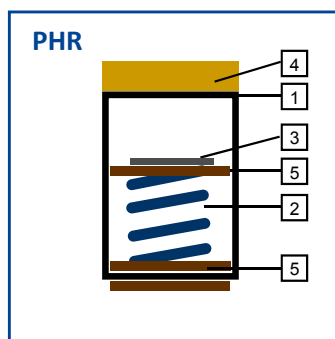
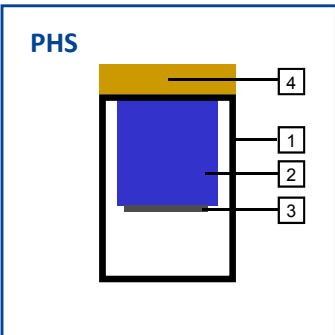
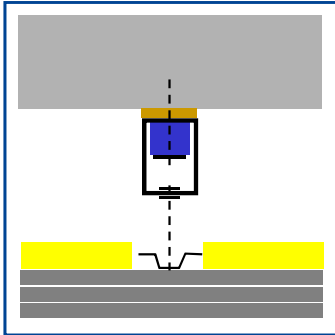
35 lbf [150 N] / 112 lbf [500 N] / 225 lbf [1000 N] / 270 lbf [1200 N]

CDM-ISO-PHR Springs:

35 lbf [150 N] / 112 lbf [500 N] / 225 lbf [1000 N]

Custom units can be designed as required.

The steel hanger frame has external dimensions of 2.4" [60 mm] x 1.9" [50 mm] x 3.2" [80 mm].





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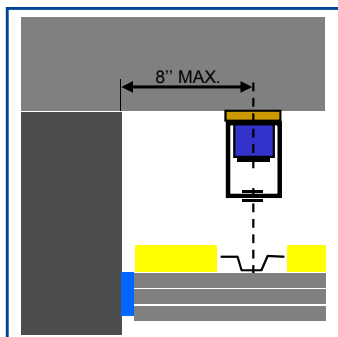


RECOMMENDATIONS

- All linear loads (drywall furring channel or grid, lengths of piping, ductwork, cabling, etc.) shall be hung by a minimum of two **CDM-ISO-PHS/PHR** elements.

For Suspended Ceiling Applications:

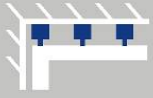
- For stability reasons, it is best to limit the distance from a hanger to the edge of the suspended ceiling to 8" [200 mm] maximum.
- The perimeter of the suspended ceiling construction must be completely decoupled from the surrounding structure using **CDM-ISO-PERIMETER-STRIP** of ~0.4" [10 mm] thickness.
- It is recommended to use low density mineral wool or fiberglass as sound absorption between the joists, to avoid standing waves. This absorptive layer should not be compressed, and should allow free space for the air above the ceiling to circulate.
- For added isolation of 2 to 3 dB, a high-performance damping sheet in corkelastomer can optionally be installed in between the ceiling board layers. CDM-RC material in 0.12" to 0.2" [3 mm to 5 mm] thickness is an excellent product for this application.



CDM-ISO-PHS/PHR

TECHNICAL DATASHEET

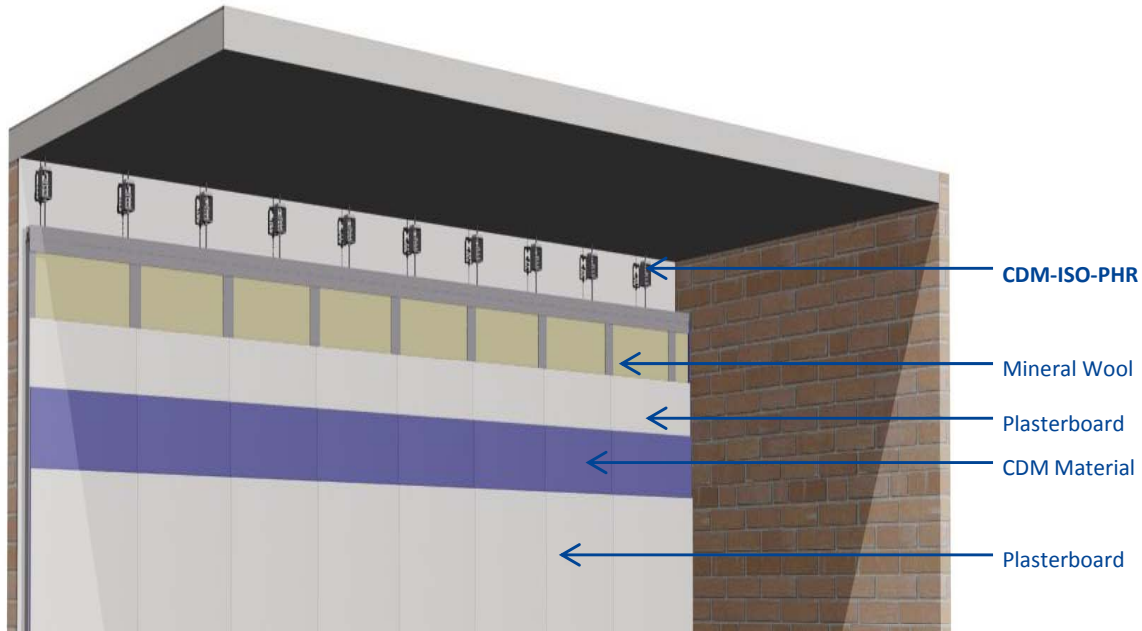
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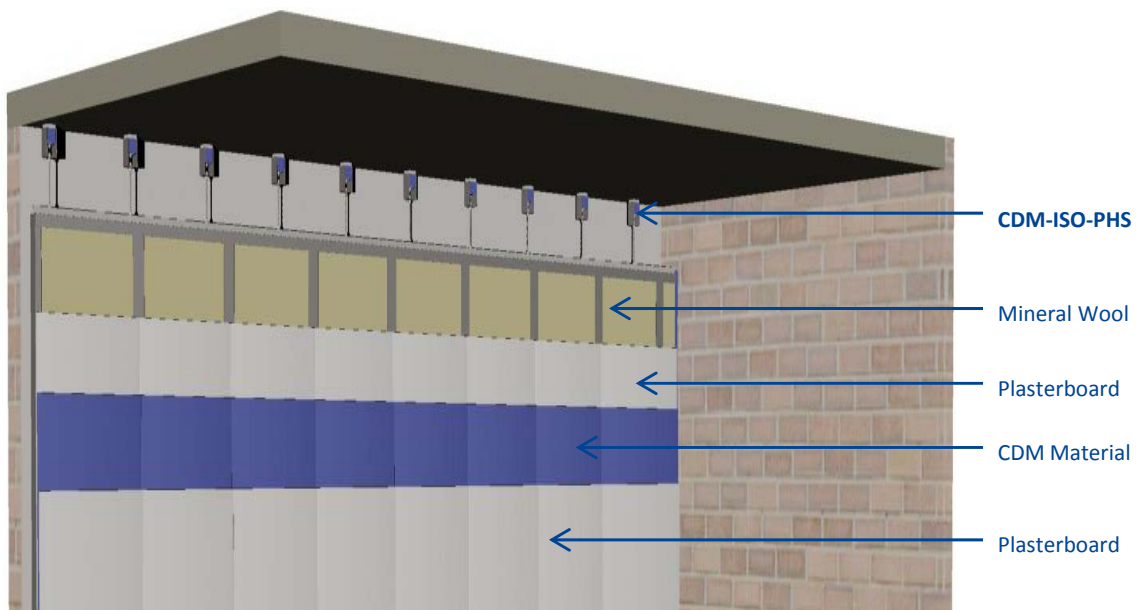
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CDM-ISO-PHR as a Wall Hanger



CDM-ISO-PHS as a Wall Hanger



CDM-ISO-WALL/CEILING

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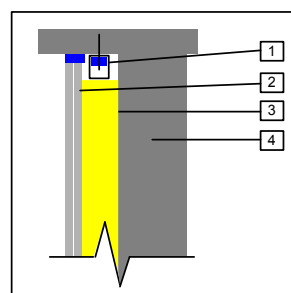
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CDM-ISO-PHS as a Wall Hanger – TEST RESULTS

CDM product tested	CDM-ISO-PHS
Description	Resilient hanger
Tested by	EMI (HU)
Test site	EMI lab in Szentendre
Test date	3/09/2004
Test method	Following ISO 140-3 (1998)
Measured parameter(s)	Rw

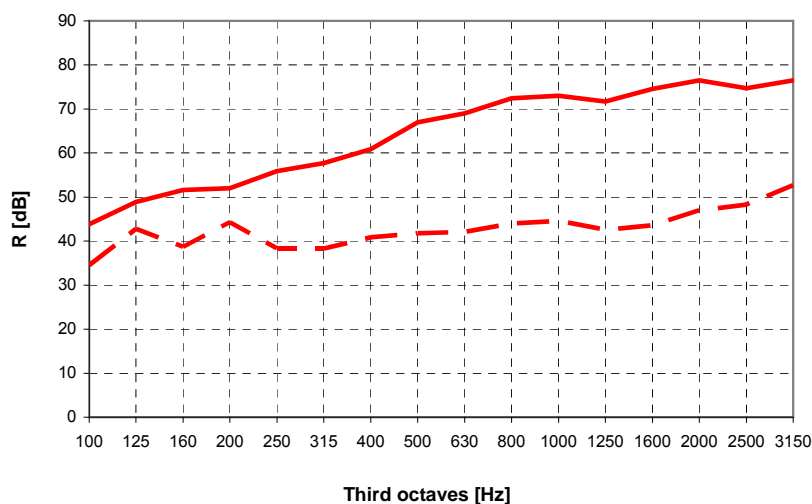
Setup
1) CDM-ISO-PHS wall hanger
2) double layer in gypsum board (2 x 12,5mm)
3) 100mm mineral wool as absorption (lightweight wall)
4) masonry wall of 300mm,plastered at both sides (15mm)
5) NA
6) NA
7) NA
8) NA
9) NA
10) NA



Results		
Frequency [Hz]	R base [dB]	R [dB]
100	34,5	43,8
125	42,8	48,9
160	38,7	51,6
200	44,3	52,0
250	38,4	55,9
315	38,3	57,7
400	40,9	60,9
500	41,8	67,0
630	42,1	69,0
800	44,0	72,4
1000	44,6	73,0
1250	42,6	71,7
1600	43,6	74,6
2000	47,0	76,5
2500	48,3	74,7
3150	52,7	76,5
4000	56,3	79,3
5000	59,6	74,5
Rw(C;Ctr) [dB]	44(0;-1)	67(-2,-7)
STC	46	69

— R base [dB]
— R [dB]

Acoustical isolation



Supermarket Nieuw Vennep, NL

PROJECT DATASHEET



Box-in-Box System

CDM-ISO-SUSPENSION-BOX

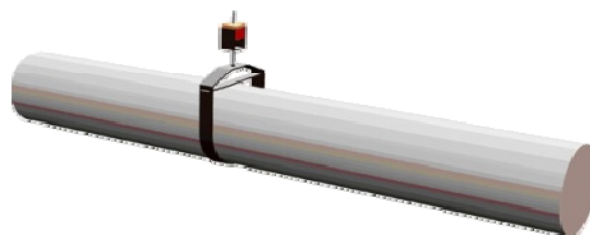


Job Type	Isolation of machine rooms
General Contractor	Dirk van den Broek Supermarkets
Installation	2003/ 2004
Contractor Machinery	Fri-Jado

Delta-L, the Dutch partner of CDM, is part of the building team for one of Holland's biggest chains of supermarkets, Dirk van der Broek. When supermarkets are built under or next to apartments, Delta-L has to provide a solution for the isolation of the machine rooms with cooling machines.

The shopping centre of Nieuw Vennep is a mall combining 40 shops with a library, several offices and 52 apartments. In order to avoid noise in the apartments, the machine room had to be isolated.

Therefore in the machine room, a **CDM-ISO-BOX** system was used, combining **CDM-ISO-LAT**, **CDM-ISO-T** and **CDM-ISO-CLIPS**. For the fixation of the piping, **CDM-ISO-PHS** hangers were used. This setup provides a reduction of the noise level from ± 85 dB(A) in the machine room to < 25 dB(A) in the neighboring houses.



CDM-ISO-PHS hangers were used for the fixation of the piping.

CASE STUDY – CDM-ISO-SUSPENSION

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noise & vibration control

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