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CABLE MANAGEMENT

Info Sheet

Airborne sound insulation of device installation trunkings

Update: 11/2008

Airborne sound insulation of device installation trunkings

In general

The test was carried out to determine the influence of the device installation trunking on sound insulation between two rooms where there has been a break in the dividing wall by the trunking. For this purpose, sound insulation measurements were carried out on test bench pursuant to DIN EN 20140-10.

Test bench

The device installation trunkings were installed in the institute's own test bench with suppressed flanking transmission pursuant to DIN EN 20140-10 by specialist staff of the Test Institute for Determination of Airborne Sound Insulation.

The determined sound insulation level of the high-insulation plasterboard single plank wall was:

R_w = 64 dB.

Test method

First of all, the high-sound insulation dividing wall was installed without breakthrough and its airborne sound insulation index determined according to DIN EN ISO 140-3.

Following this, a breakthrough opening was created in the wall through which the 2 device installation trunkings were installed and interrupted in the region of the dividing wall penetration.
The opening was located at a height of approx. 1 m above the top level of the floor, directly adjacent to a flanking wall (**see fig. 1 to 3**).

<u>The device installation trunkings were tested:</u>

1. empty (**see fig. 1**)

2. filled to 50 % with cable sections, length about 80 cm and insulating material in the region of the dividing wall penetration in accordance with manufacturer's instructions (**see fig. 2**)

3. without cable installation, with complete filling of the free cross-area with noise insulation padding in the area of the dividing wall penetration (**see fig. 3**).

The length of the noise insulation padding type 7LSB is about 30 cm, weight about 27.5 g each.

Measurements were carried out on the device installation trunkings with representative cross sections according to DIN EN 20140-10. The airborne sound insulation index was determined in addition to the effective standard sound level difference $D_{n,e,w}$. The noise-related indices for other cross-sections were also interpolated from the measurement results.

Fig. 1
Device installation trunking made of PVC, empty trunking

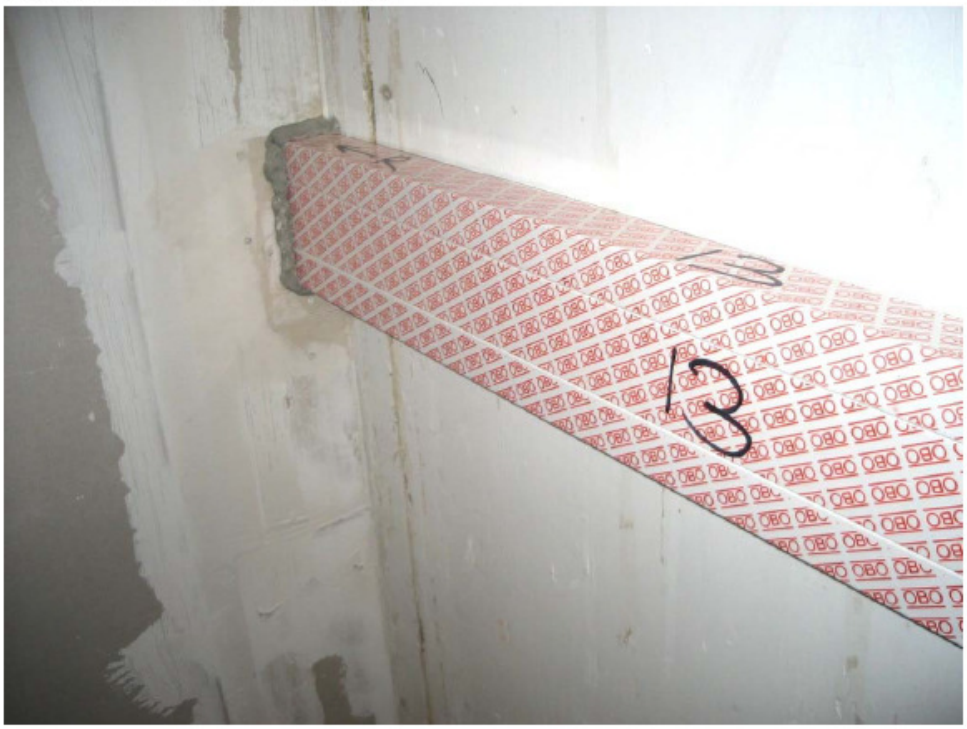

Fig. 2
Device installation trunking made of PVC, duct filled to 50 % with cables and fibre-glass wool (noise insulation padding type 7LSB)

Fig. 3
Device installation trunking made of PVC, duct filled with fibre-glass wool (noise insulation padding type 7LSB)

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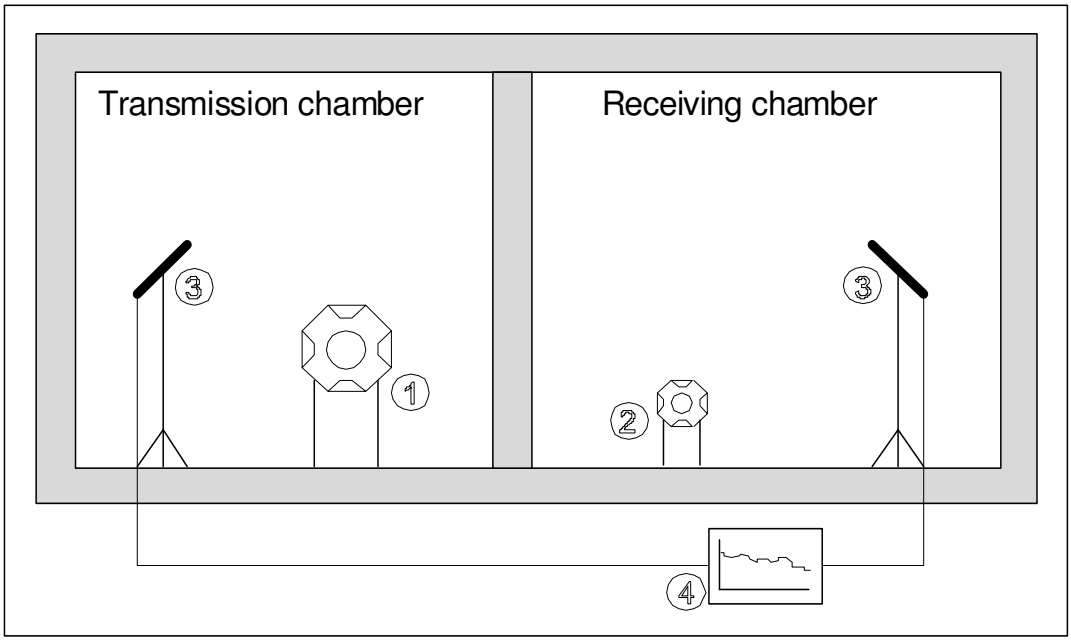
1. Test layout

Airborne sound insulation on test bench pursuant to DIN EN 20140-10	Appendix 4
Description of the procedure of the measurement of airborne sound, evaluated by a measuring device with process computer	
Contractor: OBO Bettermann GmbH & Co. KG, Hüingser Ring 52, 58710 Menden	
Object: Device installation trunkings made of PVC	

1. Test layout



	Appliance designation / Type	Serial number	Date of the last inspection / calibration until	Last calibration
1	Dodecahedron loudspeaker for radiation of third-octave band noise	DL 1	06.06.2007/-	-
2	Dodecahedron loudspeaker for reverberation time measurement	DL 2	-	-
3	Capacitor microphones: M1: Norsonic, type 1220 V1: Norsonic, type 1201 V2: Norsonic, type 1201 V2: Norsonic, type 1201	38648 29495 14691 18314	16.01.2007/31.12.2009 16.01.2007/31.12.2009 16.01.2007/- 16.01.2007/-	22.10.2008 22.10.2008 22.10.2008 22.10.2008
4	Sound level analyser: Norsonic, type 121	29837	16.01.2007/31.12.2009	22.10.2008

2. Test method

To determine the airborne sound insulation, electro-acoustically generated third-octave noise was radiated in the transmission chamber using a dodecahedron loudspeaker. Within a frequency range of 50 Hz to 5,000 Hz, measurements were taken and recorded simultaneously on two channels in the transmission and reception chamber of the generated noise levels in third-octave band stages using two capacitor microphones. Using the integrated process computer of the sound level analyser, the normal sound level differences in the individual frequency bands as well as the weighted normal sound level difference $D_{n,e,w}$ were determined as single figure value from these values and the reverberation time in third-octave band stages determined in the reception chamber.

No. of the test report:1173-001-08
SG-Bauakustik
Institut für schalltechnische Produktentwicklung
Mainstraße 15
45478 Mülheim an der Ruhr, den 07.11.2008 Stefan Grüll

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Measurement results

The tested device installation trunking (material: PVC) in a non-filled state have measured sound insulation levels which are in the region of R_w = 23 dB and 22 dB.

With 50 % cable filling and additional filling with noise insulation padding type 7LSB in the region of the dividing wall breakthrough, the airborne sound insulation of the trunkings increased by 7 dB to values in the region of R_w = 30 dB and 29 dB.

With complete filling with noise insulation padding type 7LSB in the region of the dividing wall breakthrough, the airborne sound insulation of the cable ducts increases by 9 dB to values in the region of R_w = 32 dB and 31 dB.

In practice, with airborne sound insulation between two rooms with a dividing area consisting, for example, of a wall construction made of plasterboard with a rated sound insulation of R_w = 54 dB (make: e.g. Knauf, type W 112) and a dividing surface, for example, of 10 m², this means a rated sound insulation level of approx. R'_w = 49 dB. In this case, the noise transmission via flanking components has been disregarded. The cross section of the device installation trunking is 64 mm x 170 mm and the duct is not filled.

If filled to 50 % with cables and with installation of sound insulation barriers or only fitted with sound insulation barriers without cables, the resulting sound insulation level in the example as mentioned above is approx. R'_w = 53 dB.

The values are taken from report no. 1173-001-08 and only apply for PVC ducts. Sound-related indices for steel or aluminium trunkings are shown in reports no. 1173-002-08 and 1173-003-08.

The original test reports can be found on the Intranet under: Download -> Prüfzeugnisse-Zertifikate etc. -> LFS.