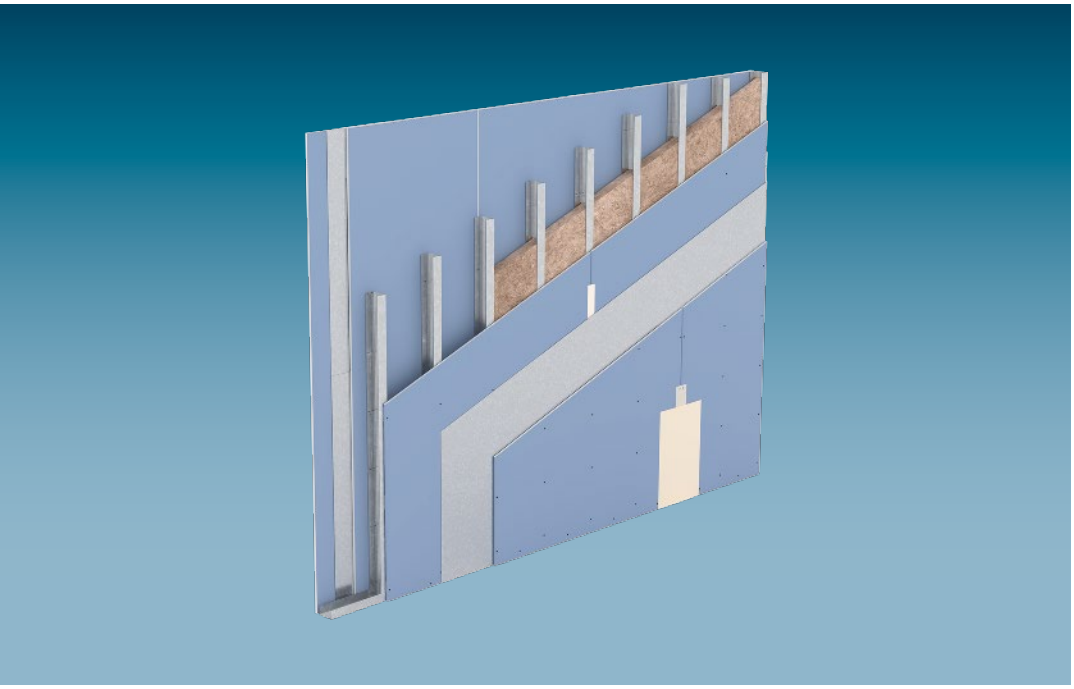


Drywall Systems

W13.de

System Data Sheet 2023-07

Knauf Metal Stud Partitions Instead of Fire Walls

W131.de – Knauf Metal stud partition F90-A with mechanical loading instead of fire wall
Single metal stud frame – double/triple layer cladding + sheet metal insert / Diamant Steel GKFI

W135.de – Knauf Metal stud partition F60-A with mechanical loading instead of fire wall
Single metal stud frame – double-layer cladding + sheet metal insert

Note on English translation / Hinweise zur englischen Fassung

This is a translation of the System Data Sheet valid in Germany.
All stated details and properties are in compliance with the regulations of the German standards and building regulations. They are only applicable for the specified products, system components, application rules, and construction details in connection with the specifications of the respective certificates and approvals.
Knauf Gips KG denies any liability for applications outside of Germany as this requires changes acc. to the respective national standards and building regulations.

Dies ist eine Übersetzung des in Deutschland gültigen Detailblattes. Alle angegebenen Werte und Eigenschaften entsprechen den in Deutschland gültigen Normen und bauaufsichtlichen Regelungen. Sie gelten nur bei Verwendung der angegebenen Produkte, Systemkomponenten, Anwendungsregeln und Konstruktionsdetails in Verbindung mit den Vorgaben der bauaufsichtlichen Nachweise.
Die Knauf Gips KG lehnt jegliche Haftung für Einsatz und Anwendung außerhalb Deutschlands ab, da in diesem Fall eine Anpassung an nationale Normen und bauaufsichtliche Regelungen notwendig ist.

Contents

Notes on the document

Knauf system data sheets are the basis for planning and application for planners and professional installers when applying Knauf systems. The contained information and specifications, constructions, details and stated products are based, unless otherwise stated, on the certificates of usability (e.g. National Technical Test Certificate (abP) valid at the date they are published as well as on the applicable standards. Additionally, design and structural requirements and those relating to building physics (fire resistance and sound insulation) are considered.

The contained construction details are examples and can be used in a similar way for various cladding variants of the respective system. At the same time, the demands made on fire resistance and/or sound insulation as well as any necessary additional measures and/or limitations must be observed.

References to other documents

System data sheets

- Knauf Metal Stud Partitions W11.de
- Knauf Burglar-Retardant Partitions W11RC.de
- Knauf Fireboard Steel Beam and Steel Column Encasements K25S.de
- Knauf Trapezoid Sheet Metal Systems K217.de (German only)

Technical brochures

- Knauf Jointing Competence Tro89.de

Technical Information

- Fastening of Loads to Knauf Wall and Ceiling Systems VT03.de

Folders

- Fire resistance with Knauf BS1.de (German only)
- Sound insulation and room acoustics with Knauf (only sections in English)

Product data sheets

- Observe the product data sheets of the Knauf system components.

Symbols in the system data sheet

The following symbols are used in this document:

Insulation layers

(G) Mineral wool insulation layer acc. to EN 13162
Non-combustible
(insulating material, e.g. from Knauf Insulation)

(S) Mineral wool insulation layer acc. to EN 13162
Non-combustible,
melting point ≥ 1000 °C acc. to DIN 4102-17
(insulating materials e.g. from Knauf Insulation)

Intended use of Knauf systems

Please observe the following:

Caution	Knauf systems may only be used for the application cases specified in the Knauf documentation. In case third-party products or components are used, they must be recommended or approved by Knauf. Flawless application of products / systems assumes proper transport, storage, assembly, installation and maintenance.

General notes on Knauf systems

Term definition

In this document the abbreviation **mB** is used to signify the resistance to mechanical loading.

Field of application

Knauf Metal Stud Partitions Instead of Fire Walls must be used as fire barriers for the termination of buildings or for sectioning buildings into fire compartments (interior fire walls) and must be sufficiently long to prevent the spread of fire to other buildings or fire compartments.

Knauf Metal Stud Partitions Instead of Fire Walls must also be highly fire-retardant or fire-resistant under additional mechanical load (mB), depending on the requirement, and be made of non-combustible building materials (fire resistance class F60-A + mB / F90-A + mB).

The resistance to additional mechanical loading (European classification “M” acc. to DIN EN 13501-2) is assessed during fire resistance testing by a defined pendulum impact stress test with a 200 kg sack containing lead shot and induces a 3000 Nm impact on the side not subjected to the fire.

Coatings and linings

Notes	After wallpapering or after application of plasters, quick drying must be ensured through adequate airing. Other coatings or layers and vapour barriers up to about 0.5 mm thickness as well as claddings (with the exception of sheet steel), do not have any influence on the technical fire resistance classification of the Knauf Metal Stud Partitions Instead of Fire Walls.

Installation zones acc. to DIN 4103-1

Installation zone 1

Partitions in rooms where low numbers of persons gather, e.g. dwellings, hotels, office and hospital rooms including corridors and halls or similar.

Installation zone 2

Partitions in rooms where large numbers of persons gather, e.g. meeting halls, school classrooms, auditoria, exhibition halls and sales rooms as well as rooms with a similar use.

Unless otherwise stated, the value in the table is the maximum permissible partition height for installation zone 2.

Construction notes

Movement joints

Movement joints of the main structure should be integrated into the construction of the Knauf Metal Stud Partitions Instead of Fire Walls. Movement joints are to be installed every 15 m on continuous installation shaft walls.

Ball impact safety

Ball impact safety is assured.

Notes on sound insulation

Requirements for the insulation layer:
Mineral wool insulation layer acc. to EN 13162
(Insulation materials, e.g. from Knauf Insulation)
Length-related flow resistance of kPa·s/m^2 ≤ r ≤ 50 kPa·s/m^2 acc. to DIN 4109-33

R_w = Weighted sound reduction index in dB without sound transmission via flanking building components

Note	mB = resistance to mechanical loading

Certificates of Usability

Knauf system	Fire resistance		Sound insulation	Structural engineering	
	Fire resistance (F90-A/F60-A)	Mechanical loading	Knauf Sound Insulation Proof	Knauf boards	Diamant / Diamant Steel GKFI
W131.de	AbP P-3391/170/08-MPA BS	BD 2104/264/23-MPA BS	L 015-12.18	AbP P-1402/354/12-MPA BS	AbP P-1405/928/10-MPA BS
W135.de	AbP P-3056/312/11-MPA BS	BD 2104/182/23-MPA BS	L 035-04.14		

The stated constructional and structural properties, and characteristic building physics of Knauf systems can solely be ensured with the exclusive use of Knauf system components, or other products expressly recommended by Knauf. The validity and up-to-datedness of the stated proofs have to be considered.

Notes on fire resistance

With the introduction of MVV TB 2017/1, the option of classifying the fire resistance duration according to DIN EN 13501-2 (e.g. EI90-M) in section C 4, MVV TB, was removed without replacement for construction types that only require a National Technical Test Certificate according to section §16a paragraph 3 MBO.

This is why within the scope of the extension of the National Technical Test Certificates, these systems are exclusively classified as "non-load-bearing, room-enclosing partitions F90-A according to DIN 4102-2". The confirmation of the “additional mechanical loading” (mB), formerly known as European classification “M”, is no longer formally possible in the National Technical Test Certificate (abP) and is therefore undertaken with supplementary fire resistance documentation.

Caution	The area of application of Knauf Metal Stud Partitions instead of Fire Walls in the National Technical Test Certificate (abP) described above is not directly included, and generally requires a project-related type approval (vBG) for application of the construction type partitions instead of fire walls. Any simplified procedures should be taken from the publications of the Principal Building Inspectorate of the respective Federal state concerned.

Fire resistance

The specifications marked with plus offer additional application options, which are not directly included in the Certificate of Usability. On the basis of our technical assessments, we assume that these marked design solutions can be assessed as a non-significant divergence. On request, we can make the documentation on which this assessment is based, such as surveyors' reports or technical assessments, available to you together with the Proof of Usability. We recommend that a non-significant divergence be coordinated and authorised in advance in consultation between the persons responsible for fire resistance and/or the relevant authorities.

plus Extension of the fire resistance Proof of Usability

Prior consultation with respect to fire resistance notes recommended.

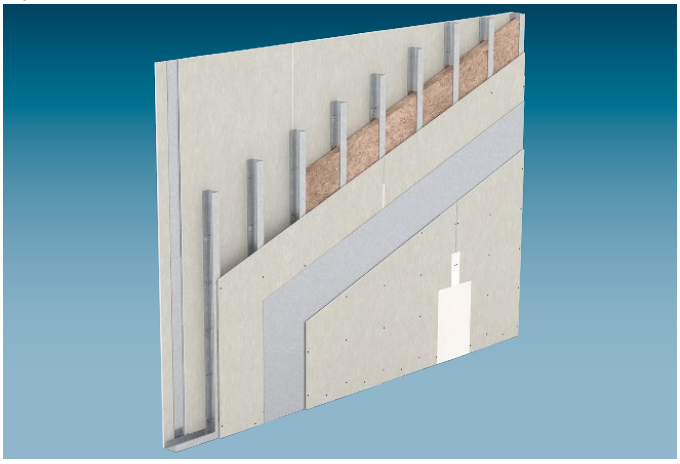
Knauf system	System-related deviations	System-wide divergences
W131.de	■ For cladding 3x 12.5 mm Feuerschutzplatte Knauf Piano fire-resistant board / Diamant ■ For Fireboard cladding ■ Installation of electrical sockets with mineral wool / board strips in case of Diamant Steel GKFI > 4 m cladding	■ When the enhanced wall heights are used ■ In case of application as a corner, T junction, movement joint, deflection head, detached wall end and single side installation before existing wall ■ In case of connection to trapezoid sheet metal cover/roof and steel beam encasement ■ For double stud profile variant ■ In case of arrangement of profile extensions in conjunction with maximum wall heights ■ In case of installation of electrical sockets with gypsum mortar / board covering
W135.de	–	

Knauf Metal Stud Partitions Instead of Fire Walls

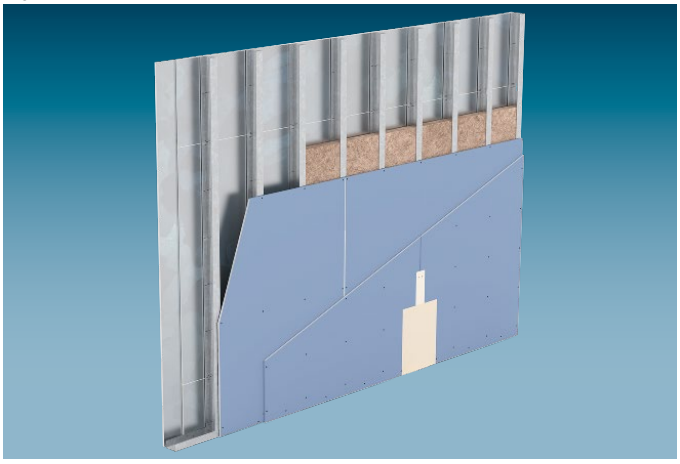
These are drywall partitions with stud frame made of sheet metal profiles and cladding on both sides made of gypsum boards and sheet metal inserts or Diamant Steel GKFI.
The fire wall quality is achieved by the combination of the cladding with gypsum plasterboards and sheet steel inserts or Diamant Steel.
Knauf Metal Stud Partitions Instead of Fire Walls are walls that retain their structural stability when exposed to a fire and remain effective as a room enclosure, as they offer a high resistance to falling components.

W131.de Metal stud partition F90-A + mB instead of fire wall

e.g. Fireboard



e.g. with Diamant Steel GKFI

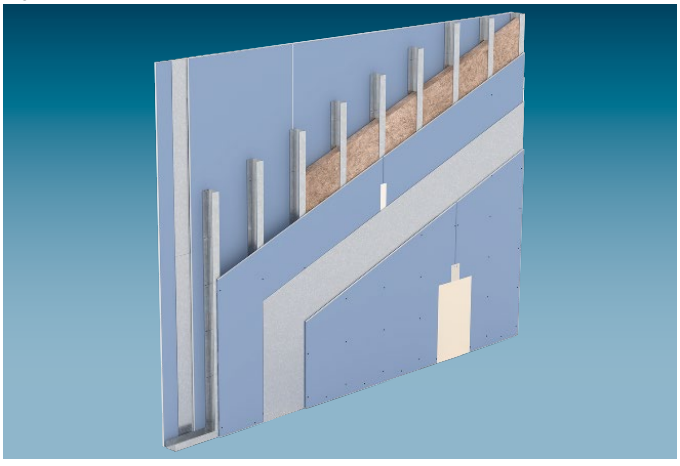


The Metal Stud Partition system **W131.de** is clad with two or three layers of gypsum board as well as sheet metal inserts on each side or alternatively with two layers of Diamant Steel GKFI.
The Metal Stud Partition system meets the additional requirements in addition to fire resistance F90-A and mechanical loading (mB):

- Robustness
- Sound insulation
- Slimness
- Low weight

W135.de Metal stud partition F60-A + mB instead of fire wall

e.g. Diamant GKFI

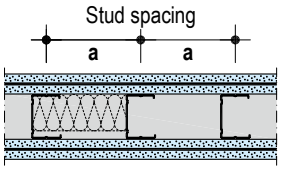
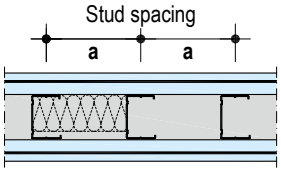
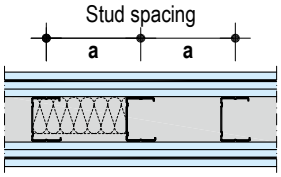


The Metal Stud Partition system **W135.de** is clad on both sides with two layers of gypsum board as well as a sheet metal insert.
The Metal Stud Partition system meets the additional requirements in addition to fire resistance F90-A and mechanical loading (mB):

- Robustness
- Sound insulation
- Slimness
- Low weight

Note	mB = resistance to mechanical loading

System variants

Knauf system	Fire resistance class	Cladding per wall side: Knauf Piano fire-resistant board	Solid Board	Diamant	Fireboard	Diamant Steel GKFI	Minimum thickness t mm	Weight: Without insulation layer approx. kg/m²	Wall thickness D mm	Profiles Knauf CW: Cavity h mm	Sound insulation: Insulation layer Min. thickness mm	Sound insulation: Sound reduction index R_w dB
W131.de Metal stud partition F90-A + mB instead of fire wall Single metal stud frame – double/triple layer cladding + sheet metal insert / Diamant Steel GKFI												
 e.g. 2x 15 mm Fireboard	**F90-A + mB**			•			**2x 15** + Sheet metal insert **1x 0.5 mm**	77	111	50	40	*64*
									136	75	60	*66*
									161	100	80	*68*
	F90-A + mB plus				•		**2x 15** + Sheet metal insert **1x 0.5 mm**	65	111	50	40	*54*
									136	75	60	*56*
									161	100	80	57
	**F90-A + mB**	•	•				**20** + **12.5** + Sheet metal insert **1x 0.5 mm**	73	116	50	40	57
									141	75	60	*57*
									166	100	80	*57*
 e.g. 3x 12.5 mm Diamant	**F90-A + mB** plus	•					**3x 12.5** + Sheet metal insert **1x 0.5 mm**	82	126	50	40	≥ *61*
									151	75	60	≥ *61*
									176	100	80	≥ *64*
				•			**3x 12.5** + Sheet metal insert **1x 0.5 mm**	94	126	50	40	≥ *64*
									151	75	60	≥ *66*
									176	100	80	≥ *68*
					•		**3x 12.5** + Sheet metal insert **1x 0.5 mm**	83	126	50	40	–
									151	75	60	–
									176	100	80	–

- ***Sound reduction index values represented in italics*** are derived values from measurements on divergent constructions.
- Sheet metal acc. to EN 10130 and EN 10152, as plates of material on rolls, galvanized, sheet metal quality DC01+ZE, nominal metal thickness ≥ 0.5 mm.

Demands on the insulation layer (Insulation materials, e.g. from Knauf Insulation):

- Required for fire resistance: None
- Fire resistance permissible: Mineral wool (G)
- Required for sound insulation: Mineral wool, length-related flow resistance of kPa·s/m² ≤ r ≤ 50 kPa·s/m² acc. to DIN 4109-33

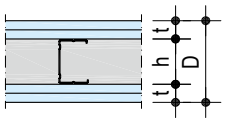
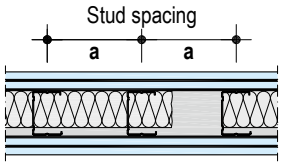
Notes

plus Extension of the fire resistance Proof of Usability see page 4.

mB = resistance to mechanical loading

Observe the notes on page 3.

System variants (continued)

Knauf system	Fire resistance class	Cladding per wall side: Knauf Piano fire-resistant board	Solid Board	Diamant	Fireboard	Diamant Steel GKFI	Minimum thickness t mm	Weight: Without insulation layer approx. kg/m²	Wall thickness D mm	Profiles Knauf CW: Cavity h mm	Insulation layer: Fire resistance resistance required: Minimum thickness mm	Min. density kg/m³	Sound insulation: Insulation layer: Minimum thickness mm	Sound reduction index R_w dB
W131.de Metal stud partition F90-A + mB instead of fire wall Single metal stud frame – double/triple layer cladding + sheet metal insert / Diamant Steel GKFI														
	**F90-A + mB**					●	**2x 12.5 + 0.4**	71	102	50	Mineral wool G 40	–	40	–
									127	75	Mineral wool G 60	–	60	63.2
									152	100	Mineral wool G 80	–	80	*63*

Sound reduction index values represented in italics are derived values from measurements on divergent constructions.

Demands on the insulation layer (Insulation materials, e.g. from Knauf Insulation):

- Required for fire resistance: See table above
- Required for sound insulation: Mineral wool, length-related flow resistance of kPa·s/m² ≤ r ≤ 50 kPa·s/m² acc. to DIN 4109-33

Partition heights

Knauf profile Metal gauge 0.6 mm	Maximum stud spacing a mm	Maximum partition heights Diamant 2x 15 mm / Diamant 3x 12.5 mm plus m	Increased wall heights plus m	Maximum partition heights Solid Board 20 mm + Knauf Piano fire-resistant board 12.5 mm m	Increased wall heights plus m	Maximum partition heights: Knauf Piano fire-resistant board 3x 12.5 mm plus m	Fireboard 2x 15 mm plus m	Fireboard 3x 12.5 mm plus m	Diamant Steel GKFI 2x 12.9 mm m
CW 50	312.5	3.00	5.00	4.00	5.00	5.00	4.95	5.00	4.00
CW 75	312.5	3.00	7.00	4.00	7.00	7.00	7.00	7.00	8.20
CW 100	312.5	3.00	7.00	4.00	7.00	7.00	7.00	7.00	9.00

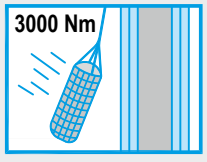
Mechanical loading

Note

Knauf Metal Stud Partitions Instead of Fire Walls are non-load bearing fire-resistant walls that retain their structural stability when exposed to a fire and remain effective as a room enclosure, as they offer a high resistance to falling components.

Impact stress resistance of 3000 Nm after exposure to fire is certified.

The mechanical loading is described in this document by the abbreviation mB.



Construction as a Security Wall (burglar-retardant) possible, depending on the design in resistance class RC2 or RC3, see data sheet Knauf Burglar-Retardant Partitions W11RC.de.

Notes

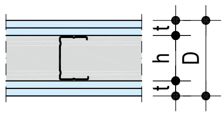
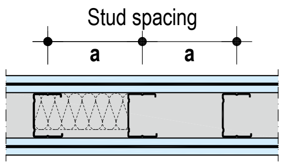
plus Extension of the fire resistance Proof of Usability see page 4.

Observe the notes on page 3.

W135.de Metal stud partition F60-A + mB instead of fire wall

W131.de
W135.de

System variants

Knauf system	Fire resistance class	Cladding per wall side: Knauf Piano fire-resistant board	Solid Board	Diamant	Fireboard	Diamant Steel GKFI	Minimum thickness t mm	Weight Without insulation layer approx. kg/m^2	Wall thickness D mm	Profiles Knauf CW Cavity h mm	Sound insulation: Insulation layer Min. thickness mm	Sound reduction index R_w dB
												
W135.de Metal stud partition F60-A + mB instead of fire wall								Single metal stud frame – double-layer cladding + sheet metal insert				
	**F60-A + mB**	●					**2x 12.5** + Sheet metal insert **1x 0.5 mm**	59	101	50	40	≥ *56*
									126	75	60	≥ *57*
									151	100	80	≥ *59*
				●			**2x 12.5** + Sheet metal insert **1x 0.5 mm**	67	101	50	40	64.6
									126	75	60	*66*
									151	100	80	68.2

- ***Sound reduction index values represented in italics*** are derived values from measurements on divergent constructions.
- Sheet metal acc. to EN 10130 and EN 10152, as plates of material on rolls, galvanized, sheet metal quality DC01+ZE, nominal metal thickness ≥ 0.5 mm.

Demands on the insulation layer (Insulation materials, e.g. from Knauf Insulation):

- Required for fire resistance: None
- Fire resistance permissible: Mineral wool G
- Required for sound insulation: Mineral wool, length-related flow resistance of kPa·s/m^2 ≤ r ≤ 50 kPa·s/m^2 acc. to DIN 4109-33

Note	mB = resistance to mechanical loading Observe the notes on page 3.

Partition heights

Knauf Profile Metal gauge 0.6 mm	Maximum stud spacing a mm	Maximum partition heights m	Increased wall heights plus Feuerschutzplatte Knauf Piano fire-resistant board 2x 12.5 mm m	 Diamant 2x 12.5 mm m
CW 50	312.5	4.00	4.35	5.00
CW 75	312.5	4.00	6.50	7.00
CW 100	312.5	4.00	7.00	7.00

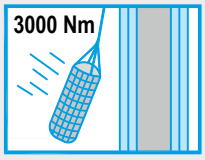
Mechanical loading

Note

Knauf Metal Stud Partitions Instead of Fire Walls are non-load bearing highly fire-resistant walls that retain their structural stability when exposed to a fire and remain effective as a room enclosure, as they offer a high resistance to falling components.

Impact stress resistance of 3000 Nm after exposure to fire is certified.

The mechanical loading is described in this document by the abbreviation mB.



Construction as a Security Wall (burglar-retardant) possible, depending on the design in resistance class RC2 or RC3, see data sheet Knauf Burglar-Retardant Partitions W11RC.de.

Notes

plus Extension of the fire resistance Proof of Usability see page 4.

Observe the notes on page 3.

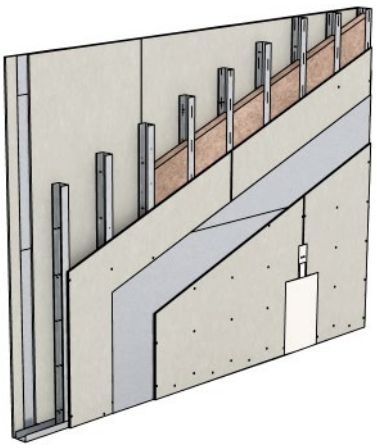
W131.de Metal stud partition F90-A + mB instead of fire wall

Details with individual steel sheets

Scale 1:5

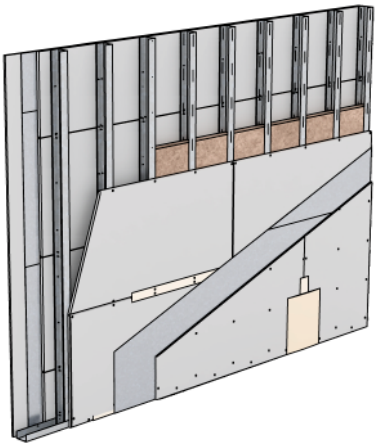
W131.de-P10 – Vertical board layer

2x 15 mm Fireboard + sheet metal



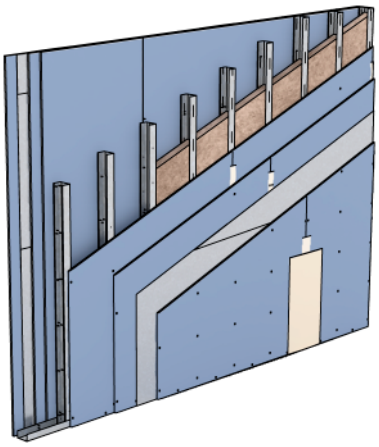
W131.de-P3 – Board layer 1 horizontal / board layer 2 vertical

20 mm Solid Board + 12.5 mm fire-resistant board Knauf Piano + Sheet metal



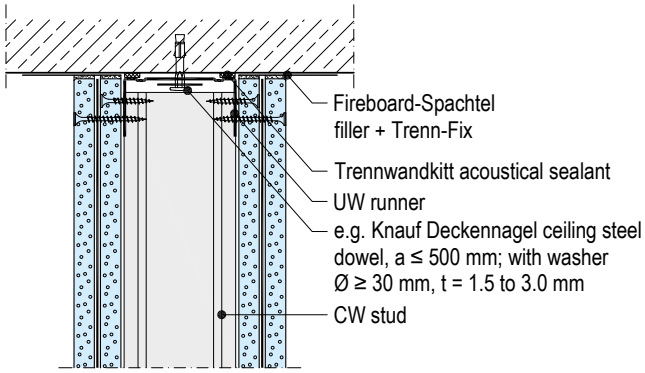
W131.de-P1 – Vertical board layer

3x 12.5 mm Diamant + sheet metal



W131.de-VO10 Ceiling connection to basic ceiling

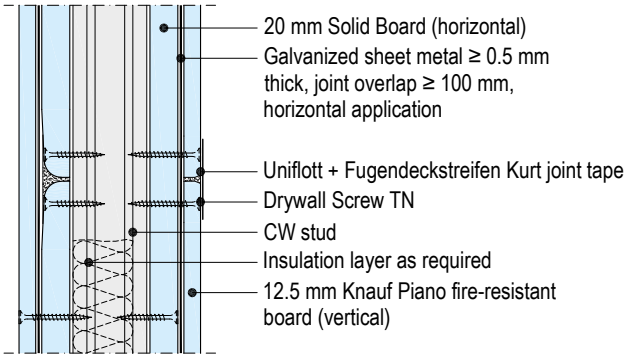
Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

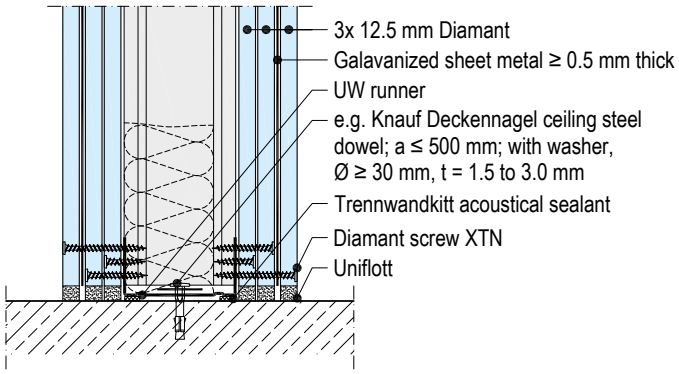
W131.de-VM3 Board joint

Vertical section



W131.de-VU1 Connection to floor on basic floor

Vertical section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

Note	mB = resistance to mechanical loading

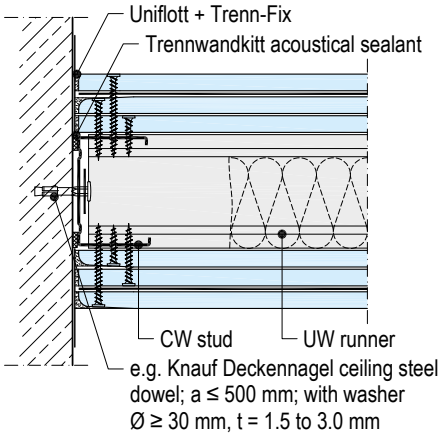
W131.de Metal stud partition F90-A + mB instead of fire wall

Details with individual steel sheets

Scale 1:5

W131.de-A1 Connection to solid wall

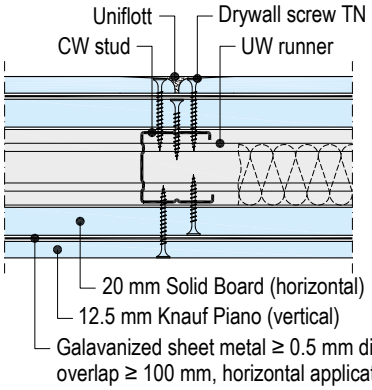
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

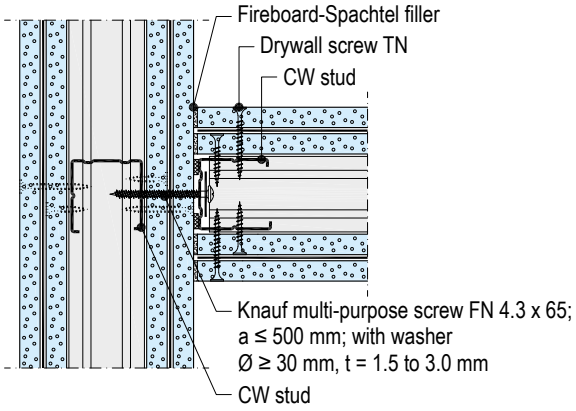
W131.de-B3 Board joint

Horizontal section



W131.de-C10 T connection

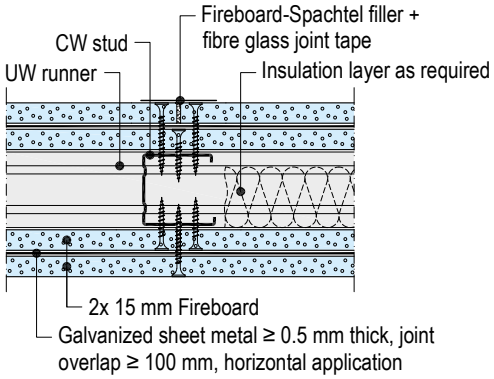
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

W131.de-B10 Board joint

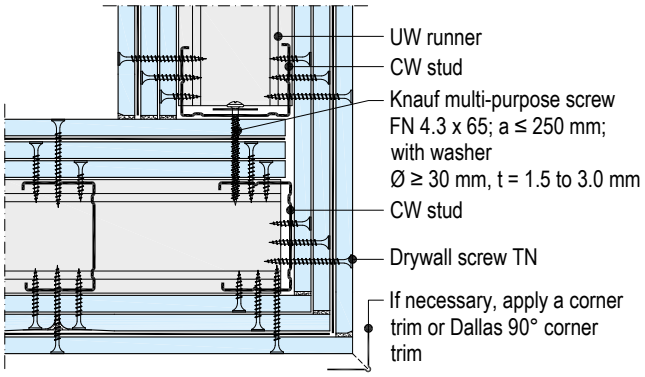
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

W131.de-D1 Corner

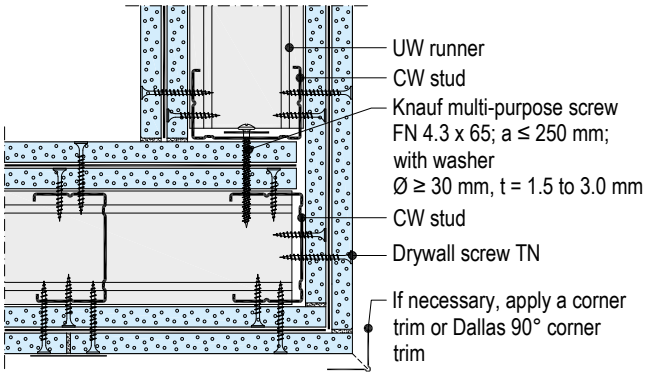
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

W131.de-D10 Corner

Horizontal section



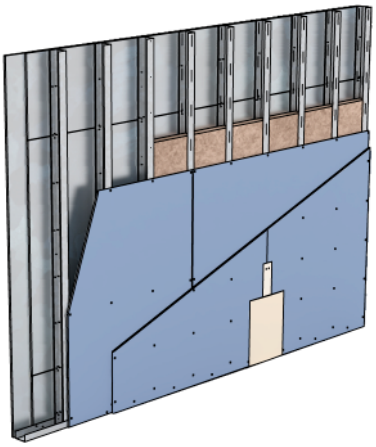
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

Details with Diamant Steel GKFI

Scale 1:5

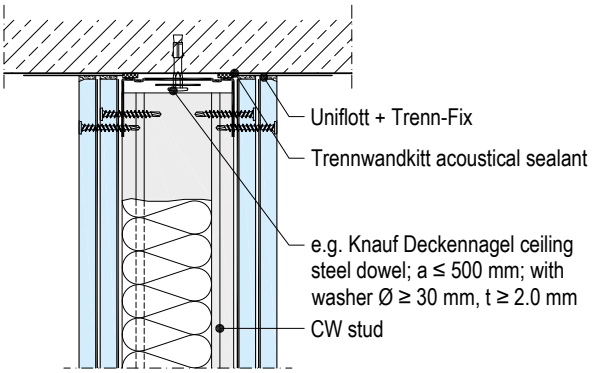
W131.de-P21 Board layer 1 horizontal, board layer 2 vertical

2x Diamant Steel GKFI



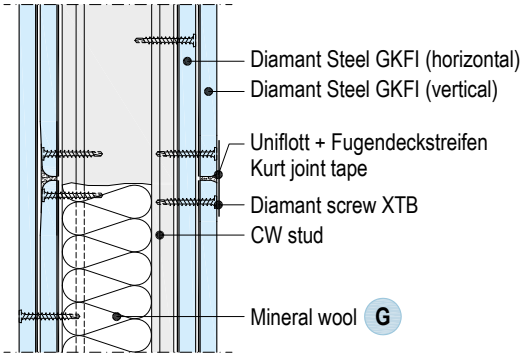
W131.de-VO21 Ceiling connection to basic ceiling

Vertical section



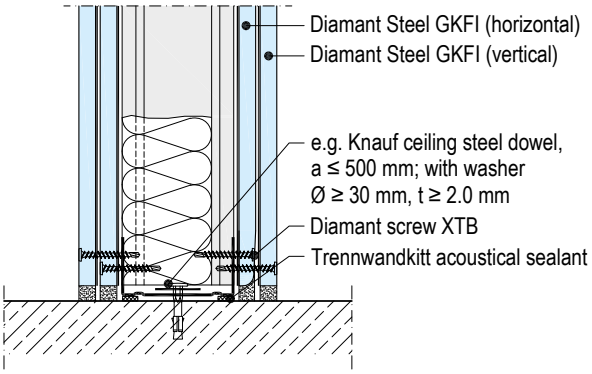
W131.de-VM21 Board joint

Vertical section



W131.de-VU21 Connection to floor on basic floor

Vertical section



Note	mB = resistance to mechanical loading

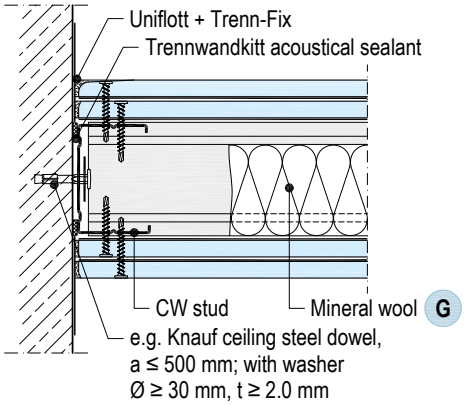
W131.de Metal stud partition F90-A + mB instead of fire wall

Details with Diamant Steel GKFI

Scale 1:5

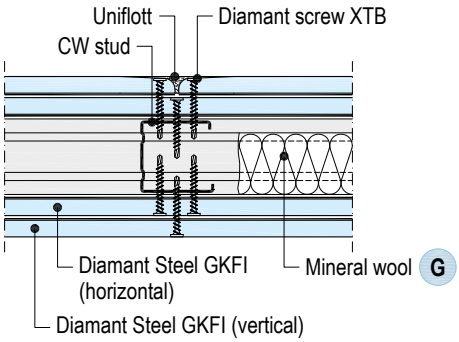
W131.de-A21 Connection to solid wall

Horizontal section



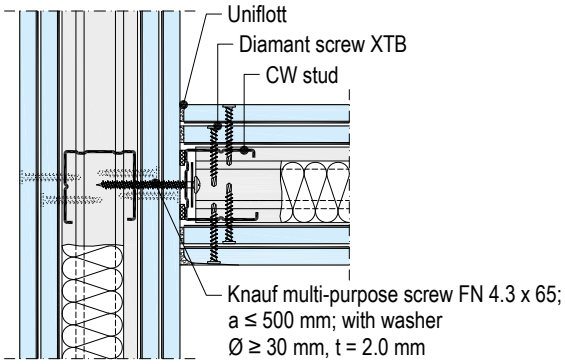
W131.de-B21 Board joint

Horizontal section



W131.de-C21 T connection

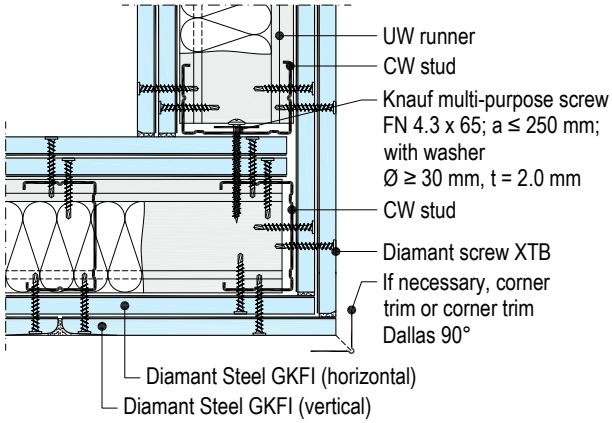
Horizontal section



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

W131.de-D21 Corner

Horizontal section



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

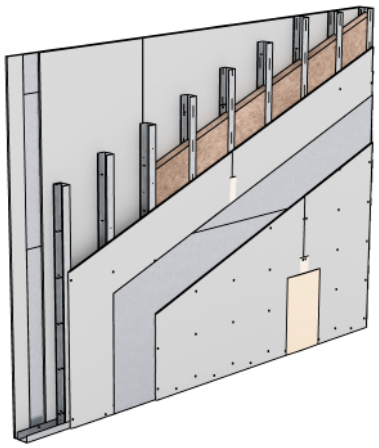
W135.de Metal stud partition F60-A + mB instead of fire wall

Details

Scale 1:5

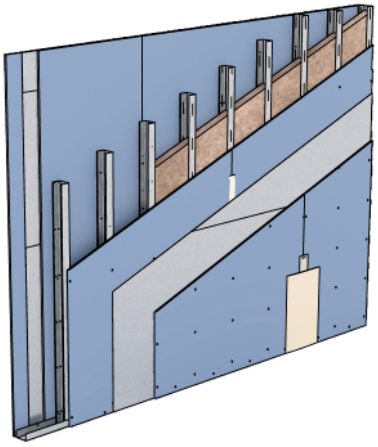
W135.de-P1 – Vertical board layer

2x 12.5 mm Knauf Piano fire-resistant board + sheet metal



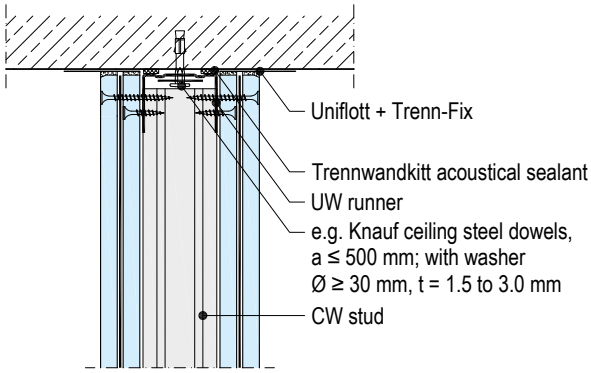
W135.de-P2 – Vertical board layer

2x 12.5 mm Diamant + sheet metal



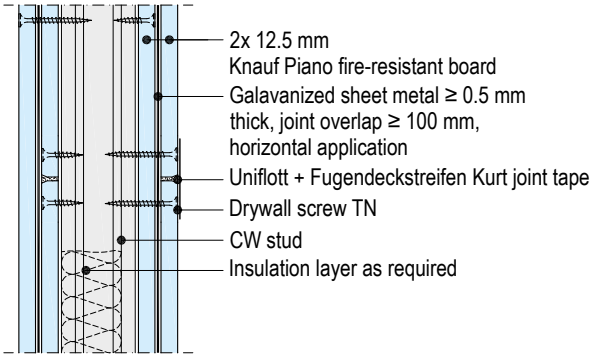
W135.de-VO1 Ceiling connection to basic ceiling

Vertical section



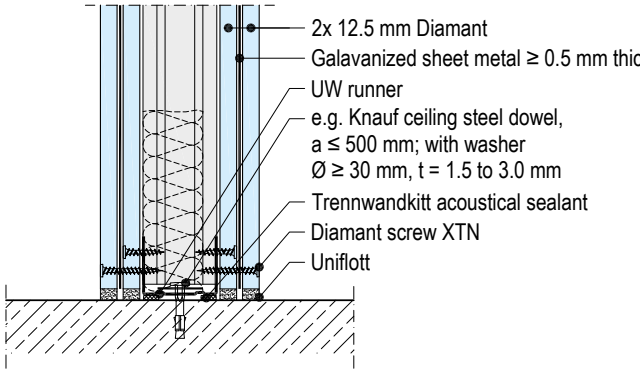
W135.de-VM1 Board joint

Vertical section



W135.de-VU1 Connection to floor on basic floor

Vertical section



Note	mB = resistance to mechanical loading

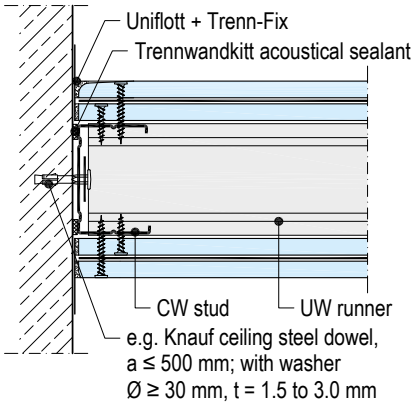
W135.de Metal stud partition F60-A + mB instead of fire wall

Details

Scale 1:5

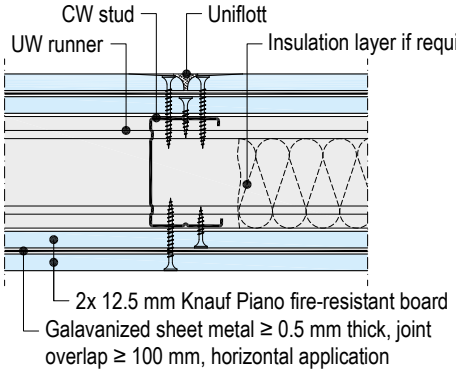
W135.de-A1 Connection to solid wall

Horizontal section



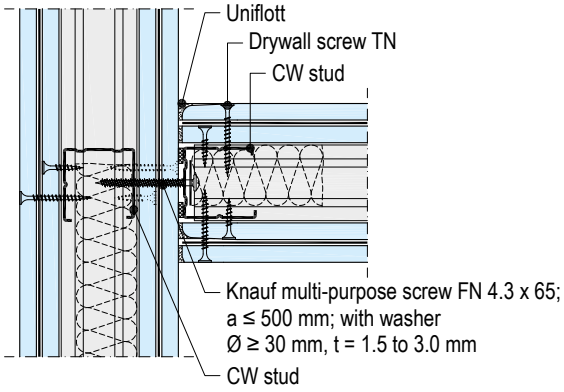
W135.de-B1 Board joint

Horizontal section



W135.de-C1 T connection

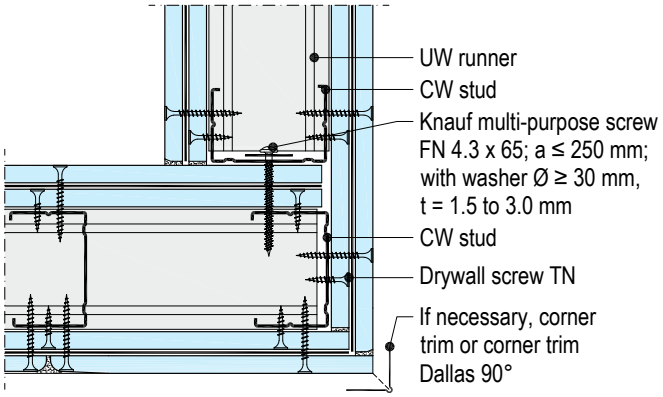
Horizontal section



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

W135.de-D1 Corner

Horizontal section



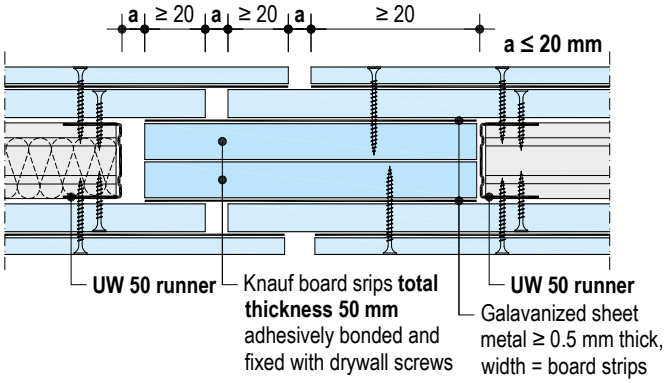
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

Details with individual steel sheets

Scale 1:5 I Dimensions in mm

W131.de-BFU3 Movement joint

Horizontal section

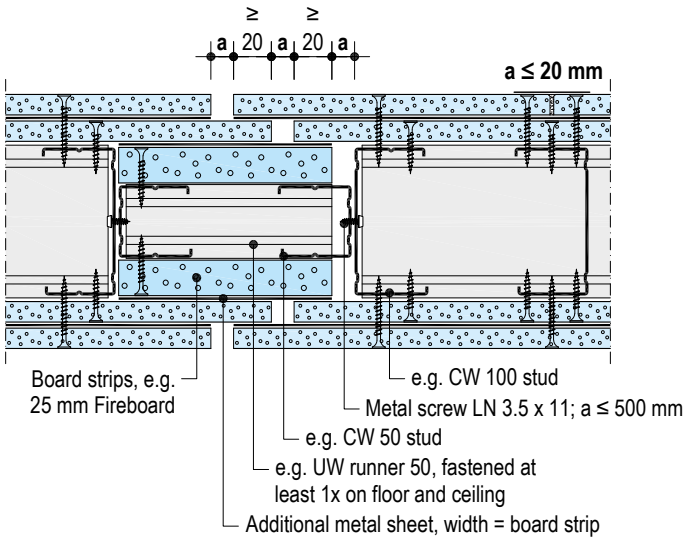


Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

- Knauf recommendation with partition cavity 50 mm
- The rigid connection of the wall shells causes a local reduction of the sound insulation.

W131.de-BFU10 Movement joint

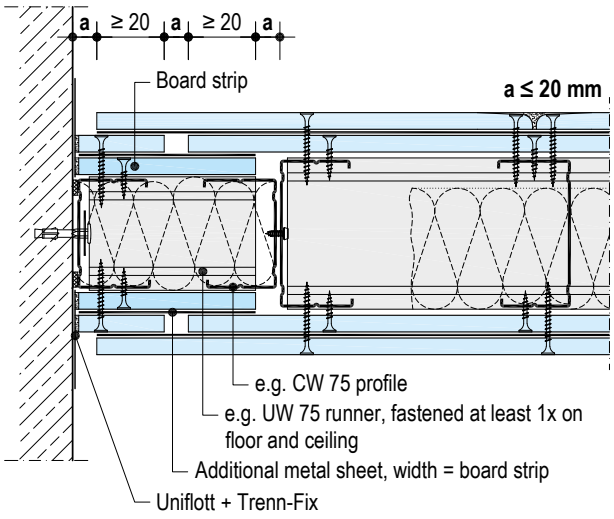
Horizontal section



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

W135.de-A2 Connection to solid wall – sliding

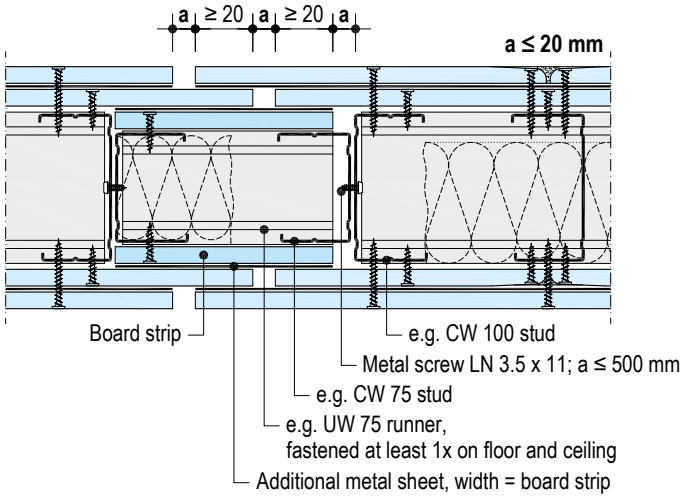
Horizontal section



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

W135.de-BFU1 Movement joint

Horizontal section



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

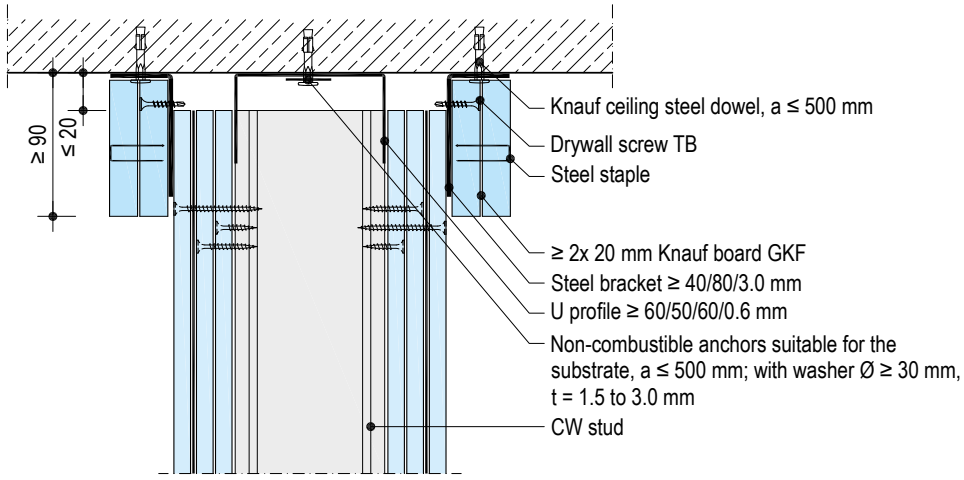
Notes	Application of detail W131.de-BFU3 also possible in same way for system W135.de. Application of detail W135.de-A2 also possible in same way for system W131.de

Details with individual steel sheets (continuation)

Scale 1:5 I Dimensions in mm

W131.de VO2 Connection to deflection head

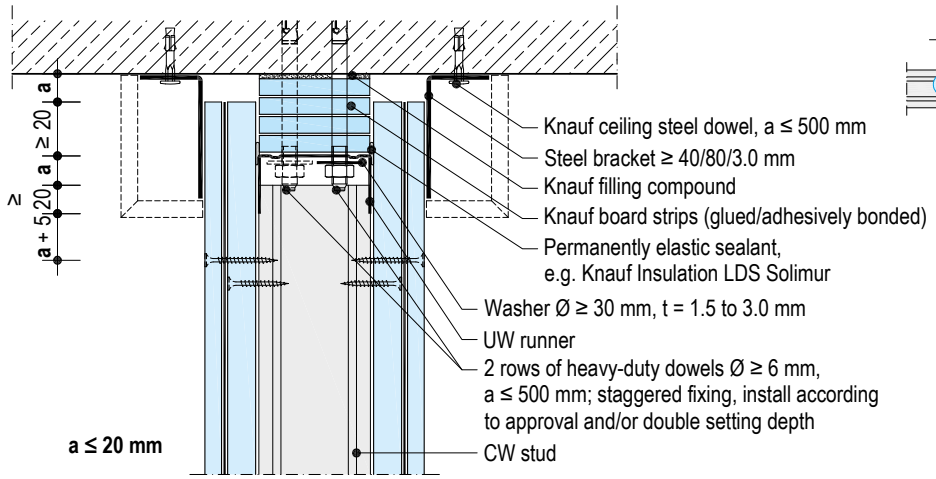
Vertical section



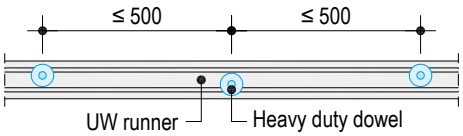
plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

W131.de VO6 Connection to deflection head

Vertical sections



Arrangement of the dowels – Scheme drawing



plus **Extension of the fire resistance proof of usability**
Prior consultation in acc. to page 4 recommended.

Details for deflection heads

Observe the permissible partition heights of the respective system (see pages 7 and 9).

Influence of a deflection head on the sound reduction index

Knauf system	Sound reduction index of the basis partition		
Single metal stud frame	$R_w \leq 56$ dB	$56 < R_w \leq 62$ dB	$62 < R_w \leq 68$ dB
W131.de / W135.de	-1 dB	-2 dB	-3 dB

In suspended ceilings under the deflection head, the deflection head does not have any negative effect on the airborne sound reduction index of the wall construction.

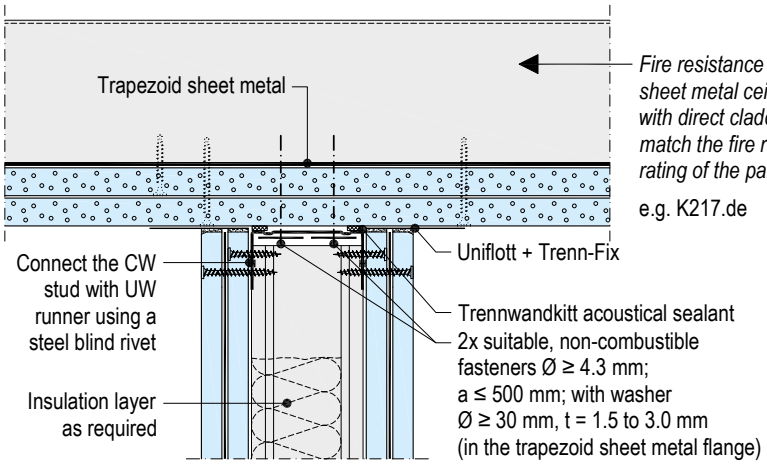
Notes	Apply a deflection head in case of ceiling deflection ≥ 10 mm. Larger ceiling deflections on request.
	Do not screw fasten Knauf boards to U profile / UW runner.
	Application of detail W131.de-VO2 and W131.de-VO6 also possible in same way for system W135.de.

Details with individual steel sheets (continuation)

Scale 1:5

W131.de-VO11 Connection to trapezoid sheet metal cover/roof

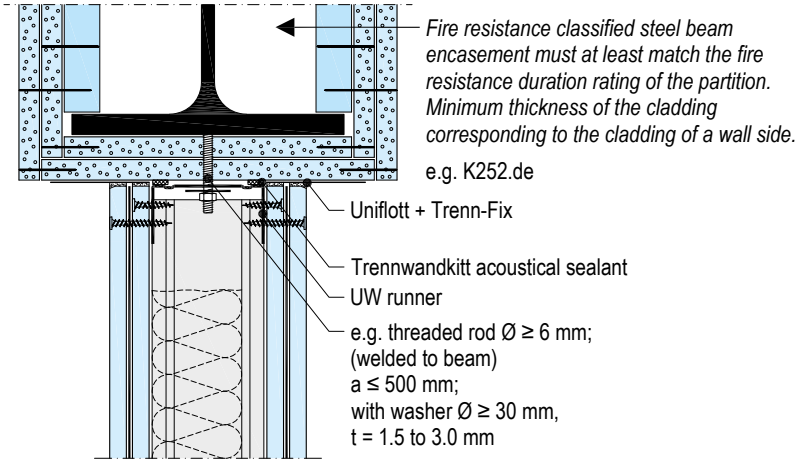
Vertical section I Continuous ceiling lining



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

W135.de-VO6 Connection to steel beam encasement

Vertical section I Representation of steel beam encasement without frame



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

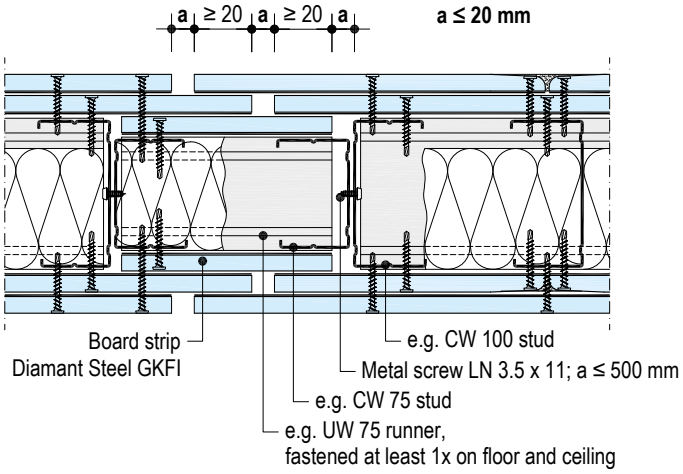
Notes	
	Application of detail W131.de-VO11 also possible in same way for system W135.de. Application of detail W135.de-VO6 also possible in same way for system W131.de Application of the trapezoid sheet metal cover/roof see system data sheet Knauf Trapezoid Sheet Metal Systems K217.de (German only). Application of the steel beam encasement see system data sheet Knauf Fireboard Steel Beam and Steel Column Encasements K25S.de.

Details with Diamant Steel GKFI

Scale 1:5 I Dimensions in mm

W131.de-BFU22 Movement joint

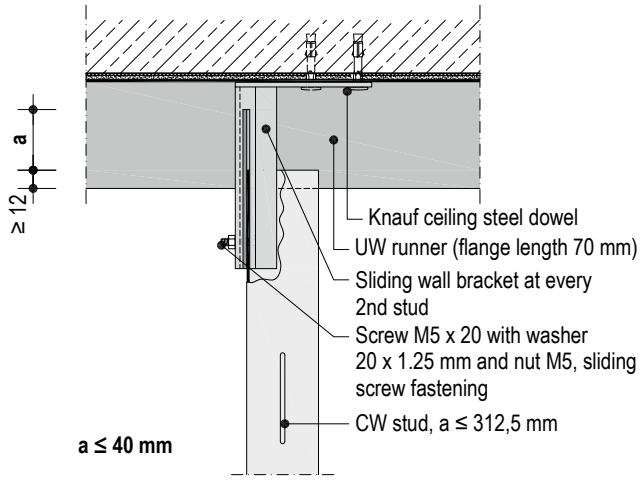
Horizontal section



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

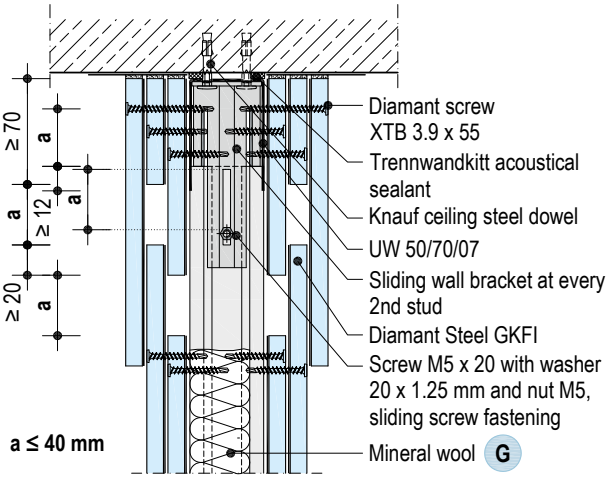
W131.de-VO23 Connection to deflection head wall bracket

Vertical section



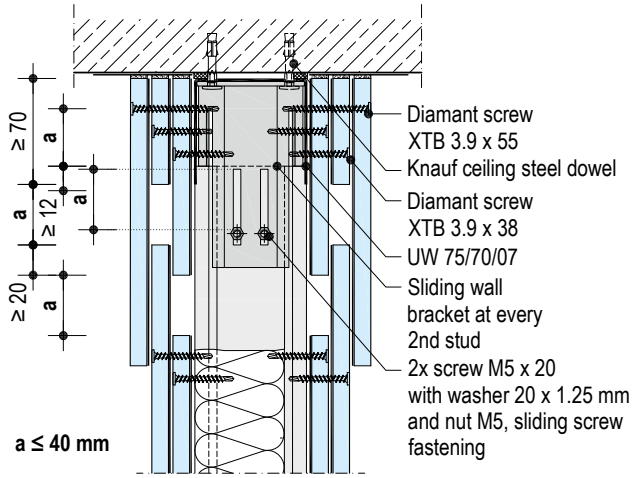
W131.de-VO22 Connection to deflection head wall bracket

Vertical section



W131.de-VO24 Connection to deflection head wall bracket

Vertical section



Details for deflection heads

Observe the permissible partition height of the respective wall system (see page 7)

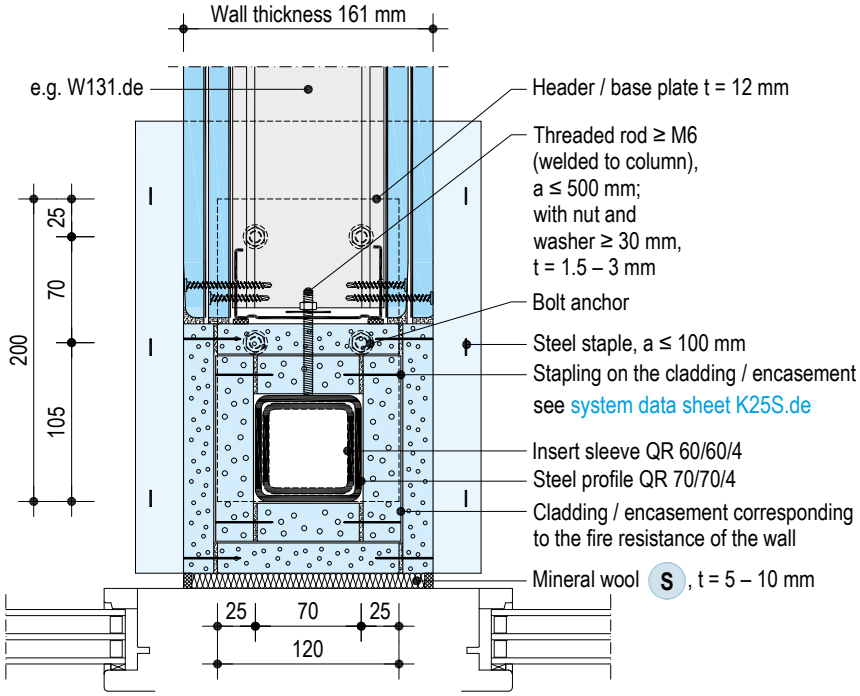
Notes	
	The deflection head shown here does not have a negative influence on the sound reduction index.
	Apply a deflection head in case of ceiling deflection ≥ 10 mm. Larger ceiling deflections on request. Deflection head with sliding wall plug-in bracket with fire-resistance and mechanical approval.
	The designs with sliding wall plug-in bracket are examples and can be used in a similar way for various cladding variants of the system W131.de.

Details – detached wall end

Scale 1:5 I Dimensions in mm

W131.de-SO3 Detached wall end

Horizontal section I Wall height up to 4 m

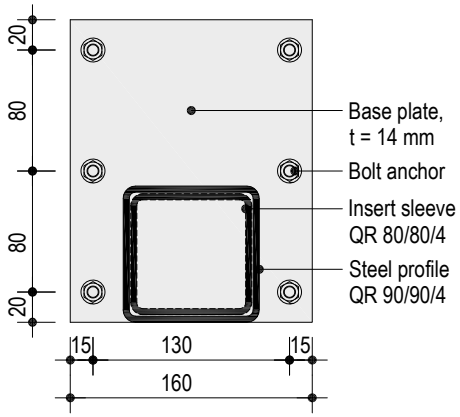


Façade without fire resistance classification (F0)

Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

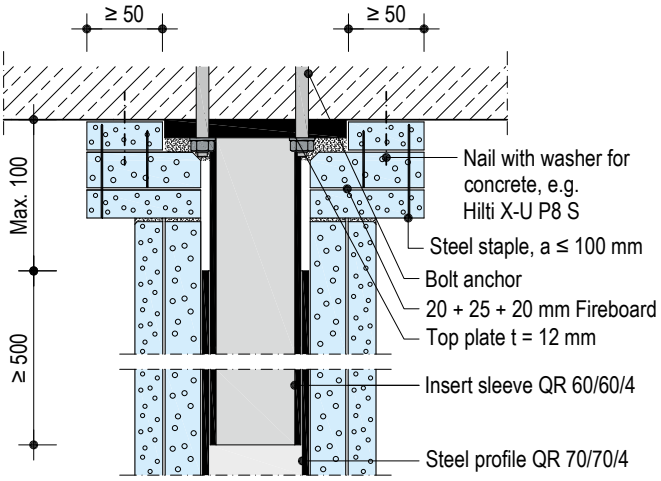
Base plate with steel profile

Scheme drawing I Wall height 4 to 7 m



W131.de-SO4 Detached wall end – Ceiling connection

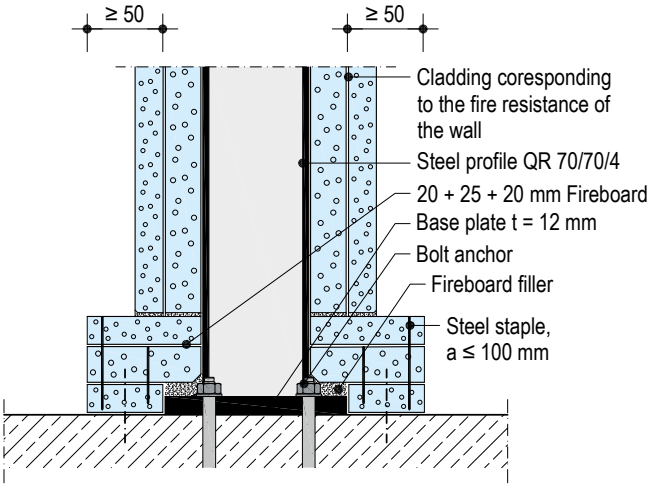
Vertical section I Wall height up to 4 m



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

W131.de-SO5 Detached wall end – Connection to floor

Vertical section I Wall height up to 4 m



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

Notes

Application of detail W131.de-SO3, detail W131.de-SO4 and detail W131.de-SO5 also possible in same way for system W135.de.

Wall height ≤ 4.00 m:
- Steel profile QR 70/70/4, S235
- Insert sleeve QR 60/60/4, S235
- Head and base plate t = 12 mm
- Bolt anchor, rated at
  - 2.5 kN shear force
  - 2.5 kNm clamping torque

Partition height > 4.00 m ≤ 7.00 m:
- Steel profile QR 90/90/4, S235
- Insert sleeve QR 80/80/4, S235
- Head and base plate t = 14 mm
- Bolt anchor, rated at
  - 2.5 kN shear force
  - 4.37 kNm clamping torque

Single side installation

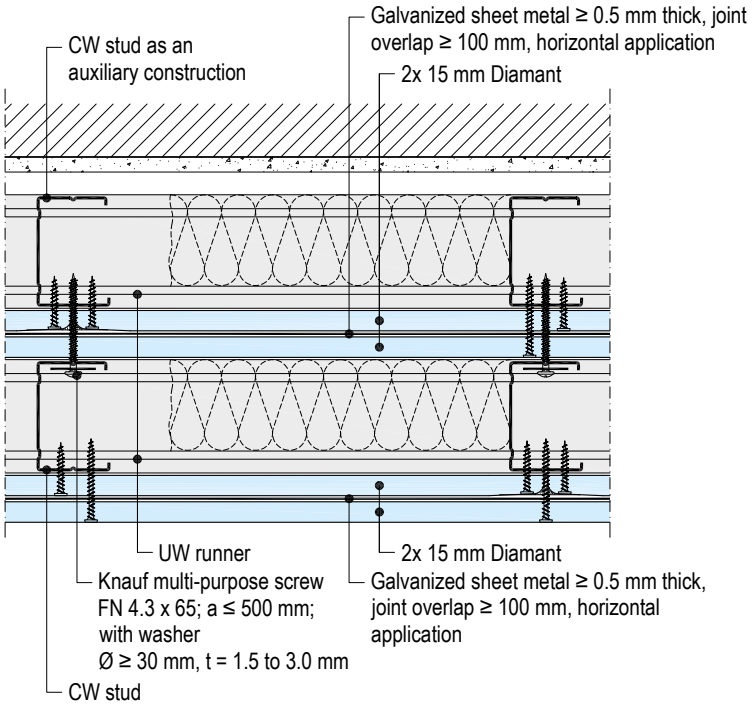
Should an existing non-load bearing wall construction, which does not fulfil fire resistance related requirements, require Knauf Metal Stud Partitions instead of Fire Walls W131.de, an auxiliary construction made of stud profiles is erected before the existing wall on which the cladding layers facing away from the room are attached. Subsequent further construction design is implemented in accordance with the respective system specifications and taking the following details into consideration.

Detail

Scale 1:5

W131.de-SO2 Single side installation before existing wall

Horizontal section



Extension of the fire resistance proof of usability
Prior consultation in acc. to page 4 recommended.

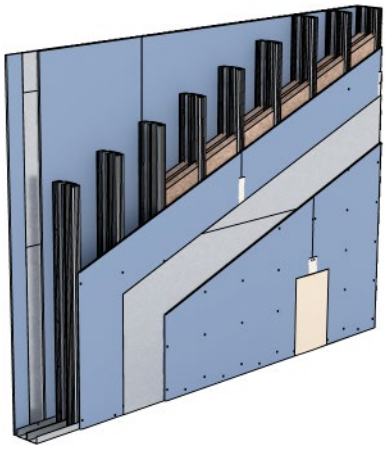
Note	Application of detail W131.de-SO2 also possible in same way for system W135.de.

Double stud frame

Scheme drawings I Scale 1:5 I Dimensions in mm

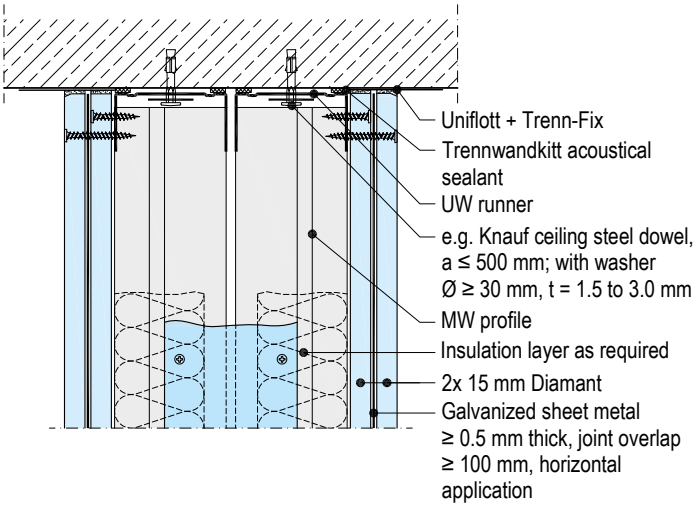
Vertical board layers

2x 15 mm Diamant + sheet metal



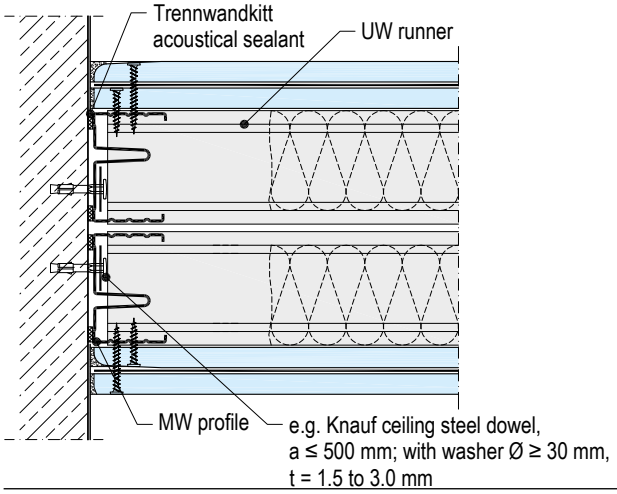
Connection to basic ceiling

Vertical section



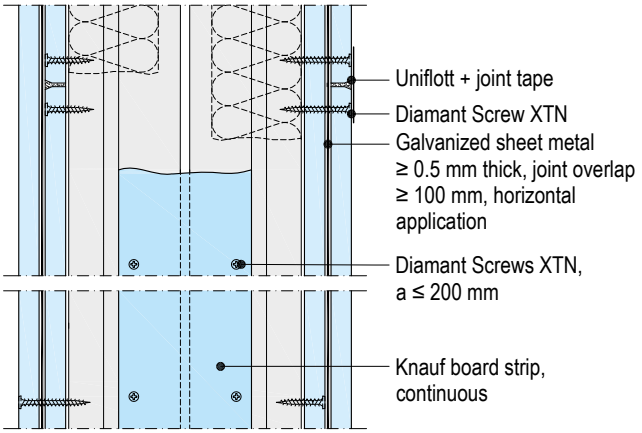
Connection to solid wall

Horizontal section



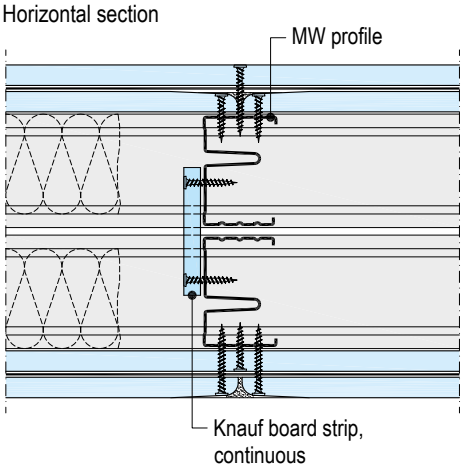
Board joint

Vertical section



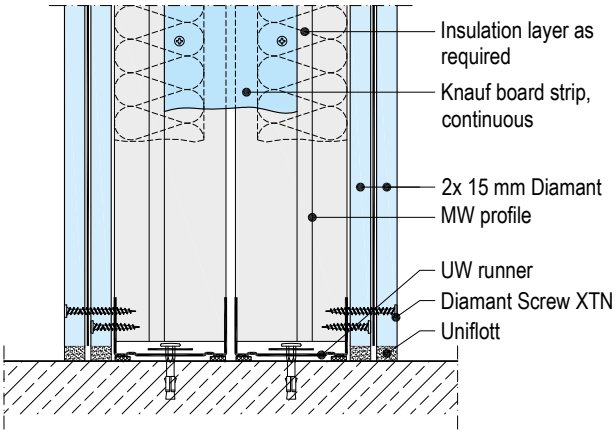
Board joint

Horizontal section



Connection to basic floor slab

Vertical section



Notes

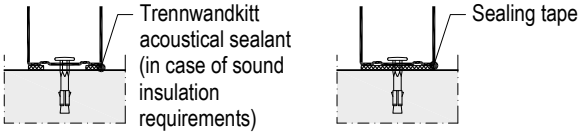
In case of the details shown on this page, a sound reduction index. R_w = ***63*** dB can be calculated.
This specification is based on measured values of comparable constructions.

Wall heights: MW75 ≤ 4.55 m; MW100 ≤ 5.0 m

The versions are examples and show a W131.de or W135.de in a similar way for various cladding variants of the respective system.

General

Apply a suitable sealant to the rear side of runners for the connection to flanking constructional components. Ensure a carefully applied seal for sound insulation requirements analogue to the specifications of the DIN 4109-33:2016-07 section 4.1.1.3 (e.g. Trennwandkitt acoustical sealant) (Recommendation: always with Trennwandkitt acoustical sealant).



If a deflection of the ceiling ≥ 10 mm can be expected, install deflection heads.

Anchor wall perimeter runners to the floor and ceiling. Anchor wall perimeter runners with suitable dowels to flanking walls.

Use suitable fasteners with washer Ø ≥ 30 mm, t = 1.5 to 3.0 mm:

- Knauf Deckennagel ceiling steel dowel (with reinforced concrete)
- 2x suitable, non-combustible fasteners Ø ≥ 4.3 mm (with trapezoid sheet metal)
- Special fire protection approved anchors suitable for the building material ≥ M6 or Ø ≥ 6 mm (with other substrates)

Max. fastening surrounding spacing ≤ 500 mm (with corners ≤ 250 mm).

Install cut-to-length CW profiles at ≤ 312.5 mm spacings into the UW profiles and align.
With system W131.de connect with 20 mm Solid Board cladding and 12.5 mm Knauf Piano fire-resistant board as well as with an additional connection to trapezoid sheet at the top and bottom each with 2 steel blind rivets ≥ 3x 8 mm.

Note	In case of a deflection head, the CW studs may not be connected to the upper UW connection runners.

Door openings

Door installation generally possible acc. to door manufacturer approval: Such as from Schörghuber or Hörmann. Observe any additional measures.

Do not arrange any board joints along door opening profiles and at the height of the door lintel profile. Arrange the long joints on the door lintel and not along the door opening, rather offset it to the door lintel center.

For further information on planning and design see system data sheet Knauf Metal Stud Partitions W11.de.

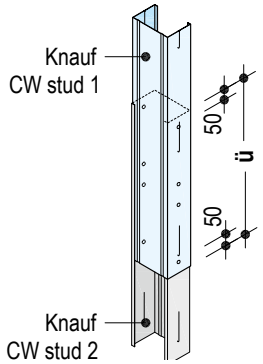
Vertical profile extensions plus

Dimensions in mm

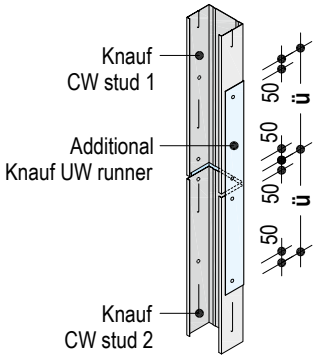
Knauf recommendation: Use floor-to-ceiling profiles.

- Stagger the heights of the profile joints (alternating upper and lower wall half).
- With fire protection requirements, a maximum of 1 profile joint per stud is permissible.

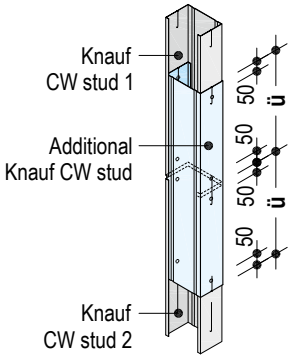
Option 1
2 CW studs interlaced to form a box.



Option 2
CW studs butt joined, nested with additional CW stud.



Option 3
2 CW profiles butt jointed, connected with additional UW runner.



Options 1 to 3:
In the overlap area **ü**, connect the profiles of each flange and side with 4 rivets/screws/crimp connections.


Crimping pliers for crimp connection

Profile extensions Knauf profiles	Overlap **ü**
CW 50	≥ 500 mm
CW 75	≥ 750 mm
CW 100	≥ 1000 mm

Note	plus Extension of the fire resistance Proof of Usability see page 4.

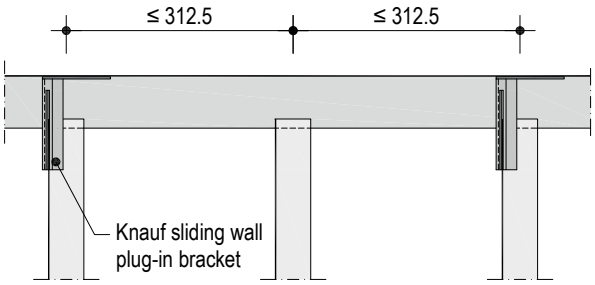
Deflection head e.g. with Knauf sliding wall plug-in bracket for W131.de

Scheme drawings I Dimensions in mm

Knauf sliding wall plug-in bracket 50 | Knauf sliding wall plug-in bracket 75 | Knauf sliding wall plug-in bracket 100

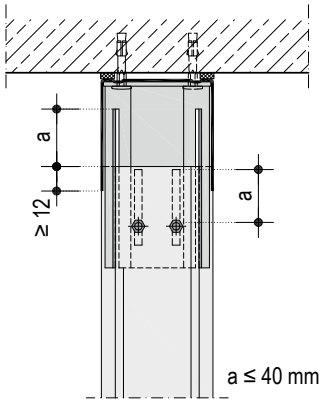
Fasten perimeter runners on floor (UW runner) and ceiling (UW runner with flange length 70 mm). Anchor wall perimeter runners with suitable dowels to flanking walls.

Set the Knauf sliding wall bracket in the UW runner on the ceiling and anchor with at least 2 suitable fasteners (Knauf Ceiling Steel Dowel for reinforced concrete substrates included in the scope of delivery). Install the sliding wall plug-in bracket on every 2nd CW stud on the partition, maximum spacing ≤ 625 mm.

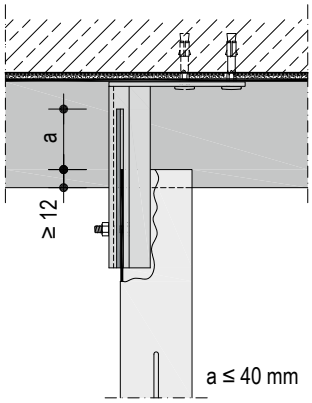


Ceiling deflection **a** ≤ 40 mm

Wall cross-section



Wall longitudinal section



Install cut-to-length CW profiles at ≤ 312.5 mm spacings into the UW profiles or Knauf sliding wall brackets.

For the length of the CW profile, the maximum likely ceiling deflection **a** as well as a profile inserted into the UW runner of at least 12 mm must be considered, where **a** may not exceed 40 mm, see figure above.

Predrill the lap of every second CW stud (diameter 5.5 mm) and connect to the wall bracket via the oblong slots. The ceiling deflection **a** must be considered when arranging the boreholes to ensure sufficient ceiling deflection. Use the accompanying M5 x 20 screws with 5.3 x 20 x 1.25 mm washer and M5 nut. Create a sliding screw fastening (do not tighten too tight)

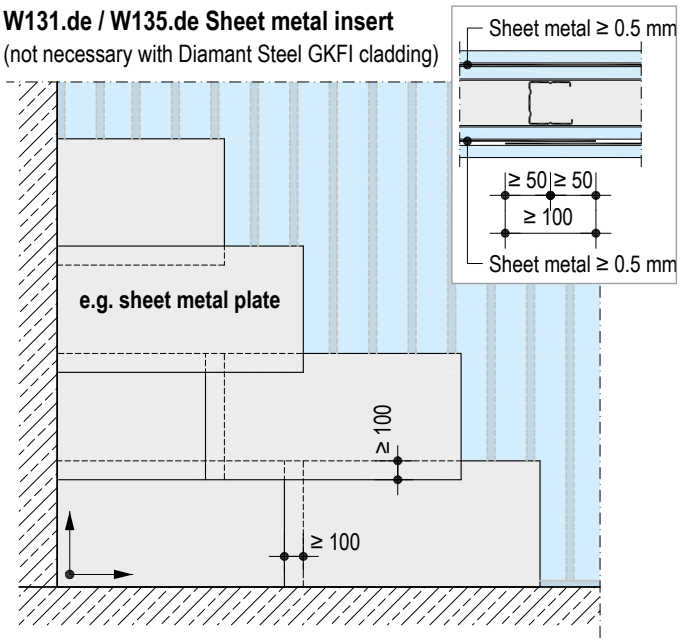
Caution	The drill hole may not be in the H punch area of the CW stud.

Installation schemes

Scheme drawings I Dimensions in mm

W131.de / W135.de Sheet metal insert

(not necessary with Diamant Steel GKFI cladding)

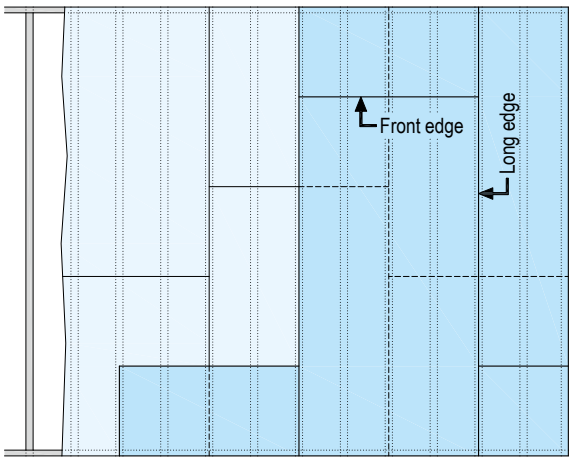


- Sheet metal layer per wall side
- Galvanized sheet metal as sheets or material on rolls, ≥ 0.5 mm thick
  - Horizontal application with joint overlap ≥ 100 mm
  - Arrange vertical joints on the partition studs
- Screw fastening with Drywall Screws (only for fastening)

W131.de/W135.de Vertical board layer

Board width:

- 1st and 2nd layer: **1250** mm (Knauf Piano fire-resistant board / Diamant / Fireboard)
- Stud spacing: 312.5 mm



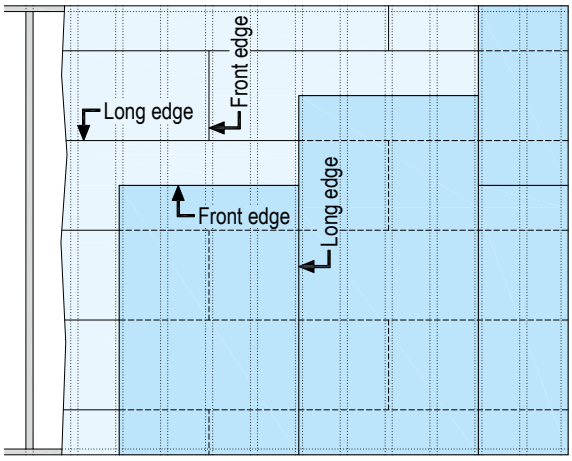
Lower/upper layer:

- Stagger the long joints between the cladding layers by 625 mm (2 stud spacings).
- If floor-to-ceiling boards are not used, stagger the front edge joints ≥ 500 mm in a cladding layer.
- Stagger the front edge joints approx. 200 mm between board layers as well.
- Board joints of cladding on opposing sides must also be staggered to one another.

W131.de Board layer 1 horizontal, board layer 2 vertical

Board width

- 1st layer: **625** mm Solid Board
- 2nd layer: **1250** mm (Knauf Piano fire-resistant board)
- Stud spacing: 312.5 mm



Lower layer:

- Recommendation: Board length 2500 mm
- Front edge joints must be staggered by at least one stud spacing.

Upper layer:

- If floor-to-ceiling boards are not used, stagger the front edge joints ≥ 500 mm.

Offset between lower and upper layer:

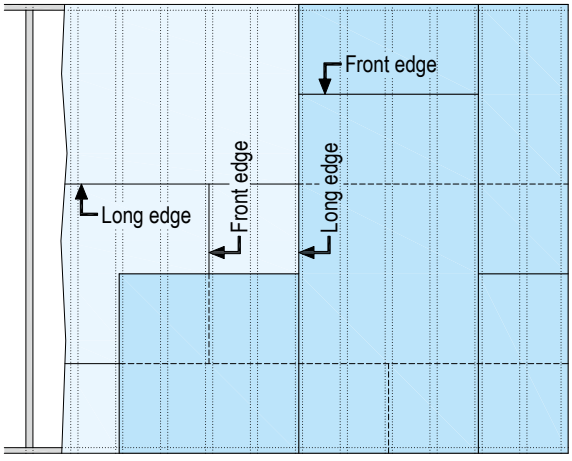
- Stagger the board joints of the upper layer by approx 312.5 mm to the board joints of the lower layer.

Offset of cladding on opposing sides:

- Board joints must also be staggered to one another.

Board width:

- 1st and 2nd layer: **1250** mm (Diamant Steel GKFI)
- Stud spacing: 312.5 mm



Lower layer (horizontal):

- Front edge joints must be staggered by at least two stud spacings.

Upper layer (vertical):

- If floor-to-ceiling boards are not used, stagger the front edge joints ≥ 400 mm.

Offset between lower and upper layer:

- Stagger the board joints of the upper layer by ≥ 310 mm to the board joints of the lower layer.

Offset of cladding on opposing sides:

- Board joints must also be staggered to one another.

Fastening of the cladding

Dimensions in mm

Fasteners to be used

Cladding thickness mm	**Metal stud frame** (penetration ≥ 10 mm) Metal gauge **s ≤ 0.7 mm** Drywall Screws **TN**	Diamant screws **XTN**	Metal gauge **0.7 mm < s ≤ 2.25 mm** Drywall Screws **TB**	Diamant screws **XTB**
2x 12.5	TN 3.5 x 25 + 3.5 x 45	XTN 3.9 x 23 + 3.9 x 38	TB 3.5 x 25 + 3.5 x 45	XTB 3.9 x 38 + 3.9 x 38
2x 12.9	–	–	–	XTB 3.9 x 38 + 3.9 x 38
2x 15	TN 3.5 x 35 + 3.5 x 45	XTN 3.9 x 33 + 3.9 x 55	TB 3.5 x 35 + 3.5 x 45	XTB 3.9 x 38 + 3.9 x 55
20 + 12.5	TN 3.5 x 35 + 3.5 x 45	–	TB 3.5 x 35 + 3.5 x 45	–
3x 12.5	TN 3.5 x 25 + 3.5 x 35 + 3.5 x 55	XTN 3.9 x 23 + 3.9 x 38 + 3.9 x 55	TB 3.5 x 25 + 3.5 x 45 + 3.5 x 55	XTB 3.9 x 38 + 3.9 x 38 + 3.9 x 55

Always use Diamant Screws when cladding using Diamant.

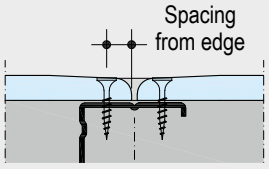
Maximum fastener spacings

Cladding	**1st layer** Board width 1250	Board width 1250 Diamant Steel GKFI	Board width 625	**2nd layer** Board width 1250	**3rd layer** Board width 1250
2-layer	750	250	600[1)]	250	–
3-layer	750	–	–	500	250

1) At least 2 screws per stud profile.

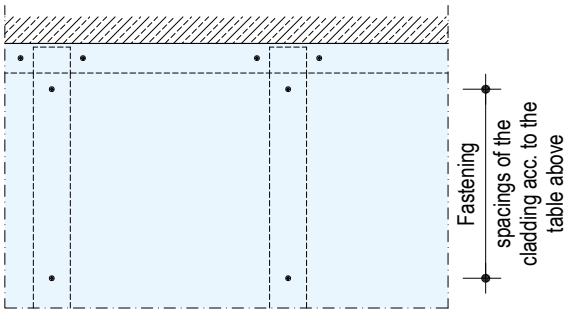
Note

For optimum sound insulation arrange the screws as far as possible from the profile lap, i.e. with minimum spacing from edge (10 mm edge covered with board liner, 15 mm cut edge).



Arrange board joint on centre of profile flange.

Screw fastening UW runner



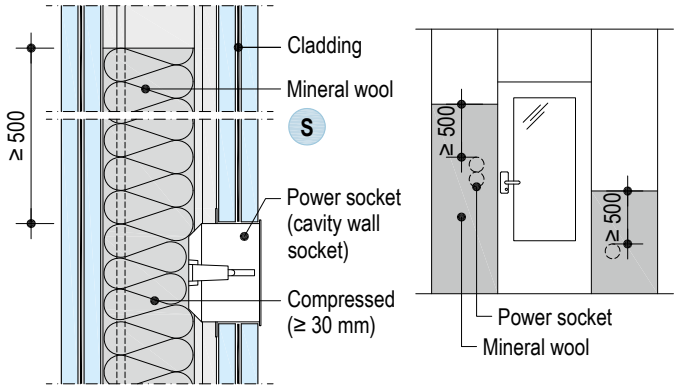
Power socket installation

Scheme drawings
Scale 1:5 I Dimensions in mm

With fire protection requirements

Power sockets, switch sockets, junction boxes, etc. may be installed at any position with partitions, except not directly opposite one another.
The entry of single electrical cables is permissible, but the remaining openings must be sealed with gypsum mortar.
Insulation layers required for fire protection reasons must be retained, however, they may be compressed to a thickness of ≥ 30 mm.

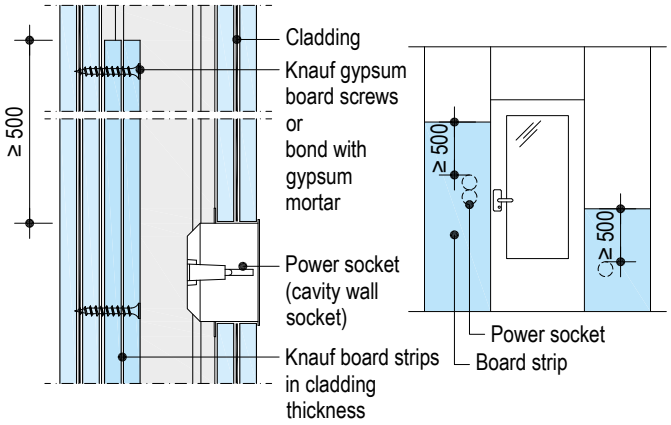
With mineral wool



Partition cavity with mineral wool (S) (Density ≥ 40 kg/m³) secured against sliding.

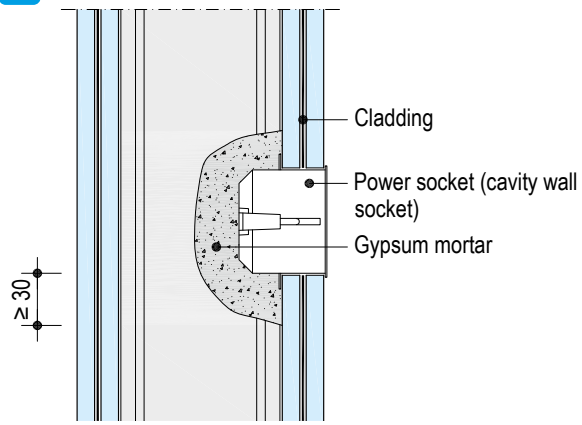
- Design with W135.de plus
- The mineral wool must fully cover the following area:
  - Up to min. 500 mm above the highest power socket
  - Down to the floor and laterally to the next studs on each side
- Compression of the mineral wool insulation layer up to a thickness of ≥ 30 mm is permissible.
- Diamant Steel GKFI: plus With wall heights > 4 m

With board strips



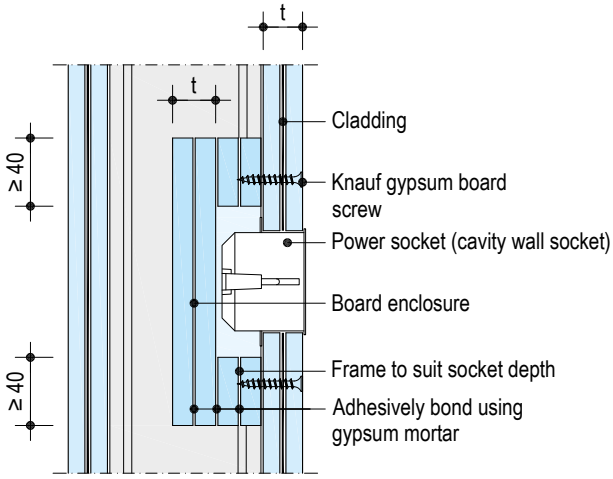
- Design with W135.de plus
- Application of board strips with the same thickness as the cladding
  - In case of cladding with sheet metal insert: Glue to the rear board or fasten using Knauf gypsum board screws.
  - For Diamant Steel GKFI: Fasten on the rear board with Diamantschraube screws XTN 3.9 x 23.
- The board strips must fully cover the following area:
  - Up to min. 500 mm above the highest power socket
  - Down to the floor and laterally to the next studs on each side
- Diamant Steel GKFI: plus With wall heights > 4 m

plus With gypsum mortar



- Enclose power sockets in gypsum mortar (gypsum bed ≥ 30 mm thick).

plus With board covering



- Surround power sockets with gypsum boards (≥ thickness **t** of the weakened cladding layer).

Sound insulation

Notes for avoidance of performance losses in noise reduction measures

- Avoid rigid connections with the opposite partition cladding.
- For partitions with sound insulation $R_w \leq 60$ dB:
  - Do not install power sockets opposite one another for each partition section
  - Seal any remaining openings after installation of the sockets
- Solutions for walls with sound insulation $R_w \geq 60$ dB or for power sockets located opposite one another, see Sound insulation with Knauf – Partitions, SS04.de (German) in chapter Built-ins.

Notes

plus Extension of the fire resistance Proof of Usability see page 4.

Solutions for cables and pipe penetrations see Fire resistance with Knauf BS1.de (German only) chapter Cable and pipe penetrations.

Knauf Metal Stud Partitions Instead of Fire Walls

Information on Sustainability of Knauf Metal Stud Partitions Instead of Fire Walls

Building assessment systems ensure the sustainable quality of buildings and constructional structures by a detailed assessment of ecological, economic, social, functional and technical aspects.

In Germany the following certification systems are of particular relevance:

- DGNB System
  Deutsches Gütesiegel Nachhaltiges Bauen
- BNB
  Bewertungssystem Nachhaltiges Bauen - Quality rating system for environmentally sustainable building)
- LEED
  Leadership in Energy and Environmental Design

Knauf products and Knauf Metal Stud Partitions Instead of Fire Walls can positively influence many of these criteria.

DGNB/BNB

Ecological Quality

- Ecological performance evaluation of the building:
  Relevant environmental data are contained in the EPD for gypsum boards and fillers.
- Risks for the local environment:
  - Gypsum as an ecological material
  - Profiles are hot-dip galvanized and free of Chromium VI

Economic Quality

- Building related life-cycle costs:
  Cost-effective Knauf Drywalling
- Flexibility and suitability for conversion:
  Flexible Knauf Drywalling

Technical Quality

- Sound insulation:
  Exceeding the demands of the standard with Knauf sound installation
- Ease of dismantling and recycling:
  Possible with Knauf Drywalling

LEED

Materials and Resources

- Building Life-Cycle Impact Reduction:
  Relevant ecological performance evaluation data are contained in the EPDs for gypsum boards and filler.
- Environmental Product Declarations:
  Relevant data are contained in the EPD for gypsum boards and fillers.
- Sourcing of Raw Materials:
  Recycled content in Knauf gypsum boards, e.g. board liner

Indoor Environmental Quality

- Low-Emitting Materials:
  Knauf products are regularly subject to VOC measurement.

Videos for Knauf systems and products can be found under the following link:
youtube.com/knauf

Find the right system for your requirements!
knauf.de/systemfinder

The Knauf Infothek App now provides all the current information and documents from Knauf Gips KG at any time and in every location in a clear and comfortable way.
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The stated constructional and structural design specifications and characteristics of building physics of Knauf systems can only be ensured with the exclusive use of Knauf system components, or other products expressly recommended by Knauf.