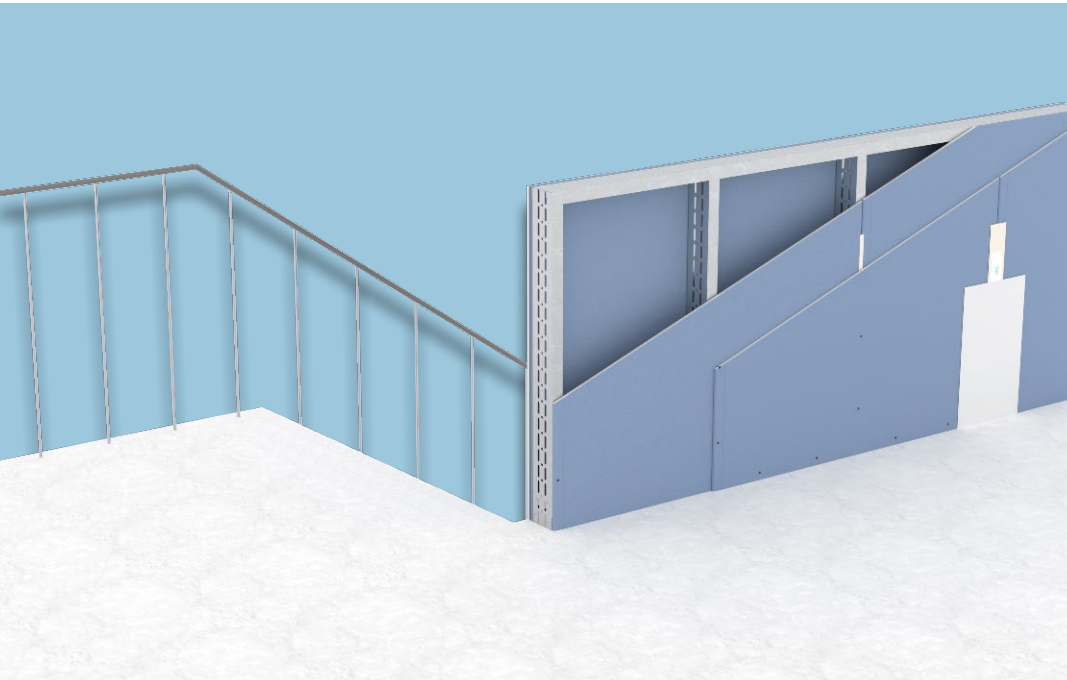


Note on English translation / Hinweise zur englischen Fassung

This is a translation of the Technical Information 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.



Drywall Systems

SL02.de

Technical Information 2019-07

Knauf Balustrades

Safety Barriers in Drywall Design

General

Balustrades are considered in Germany in acc. to § 38 "Guards" in the German Model Building Code. The purpose of a balustrade is to provide a safety barrier.

Depending on the state model building code concerned, balustrades are required for areas that are walkable according to the planning proposals with fall heights from adjacent areas as low as 50 cm.

Certificate of Usability

AbP P-1101/716/18-MPA BS

Balustrade height

- In case of fall heights up to 12.00 m the balustrade height $h \geq 0.90$ m
 - In case of fall heights exceeding 12.00 m the balustrade height $h \geq 1.10$ m
- "Further demands regarding the height of balustrades or fall heights must be determined by the planner. Additional demands that are dependent on the respective Federal states may need to be considered."

For drywalling, the area of application for safety barriers is regulated in the DIN 4103-1 with reference to DIN EN 1991-1-1/NA:2010-12, table 6.12DE. The horizontal loads to be expected are summarized in table 2.

The serviceability limit according to DIN EN 1995-1-1 NA, table NA.13 for cantilevers with $L/100$ is taken as a basis. The load from the load capacity as shown in table 2, is the limit state of the load bearing capacity with a safety factor $\gamma = 1.50$.

Construction types

Knauf offers cost-effective solutions for the loads that arise and the geometrical requirements. The construction types listed in the following are suitable for the fields of application listed in table 2.

Construction types acc. to profile size

Type	Grid
I	Knauf profile UA 75 with fastening kit for UA 75
II	Knauf profile UA 100 with fastening kit for UA 100

Table 1 Construction types

Usage categories and construction types

Horizontal loads and safety barriers			Recommended construction types and spacing of studs						
Category	Usage	Horizontal load capacity kN/m ²	Balustrade height h = 0.90 m			Balustrade height h = 1.10 m			
			Stud spacing			Stud spacing			
			312.5 mm	417 mm	625 mm	312.5 mm	417 mm	625 mm	
A	A1	0.50							
	A2		I, II	I, II	I, II	I, II	I, II	I, II	
	A3								Living rooms and lounges
B	B1	1.00							
	B2		Office spaces, work spaces, hallways						
	B3								
C	C1	1.00	I, II	I, II	I, II	I, II	I, II	II	
	C2								
	C3								
	C4								
	C5								
	C6								2.00
D	D1	1.00	I, II	I, II	I, II	I, II	I, II	II	
	D2								Sales areas
	D3								
E	E1.1	1.00	I, II	I, II	I, II	I, II	I, II	II	
	E1.2								Storage areas, factories and workshops, stables, storage rooms and entrances
	E1.3								
T _d	T1	0.50	I, II	I, II	I, II	I, II	I, II	I, II	
	T2	1.00	I, II	I, II	I, II	I, II	I, II	II	
	T3	2.00	II	II	–	II	–	–	
Z _d	–	0.50	I, II	I, II	I, II	I, II	I, II	I, II	
Note	For dimensioning, a screed height of 10 cm in addition to the balustrade height must be considered (installation of the balustrade on the basic floor).								

Table 2 Usage categories and construction types

Design

Align UW runners on the basic floor. Equalize unevenness in the substrate. The connection must be fully established.

Design type I with UA 75 profile

The fastening kit for UA 75 consists of 1 support base, 2 bolt anchors M10, 2 screws M8 x 16, 2 washers, 2 hexagonal nuts and 2 drilling screws. Anchor the support base with bolt anchors M10 in the supporting substrate at axial spacing acc. to table 2. Screw fasten the support base with profiles UA 75 in the oblong hole of the lap using two adjacent screws M8 x 16 with washers and nuts. Subsequently screw fasten the profile UA 75 to the sides of the angled section of the support base each with Ø 5.5 mm bolt screws.

The upper end of the balustrade is completed by a UW runner.

Design type II with UA 100 profile

The fastening kit for UA 100 consists of 2 angle brackets, 2 U-pieces, 4 bolt anchors M8, 4 screws M8 x 25, 4 washers, 4 hexagon nuts and 4 drilling screws. Anchor the angle bracket and U-piece with bolt anchors M8 in the supporting substrate at axial spacings acc. to table 2. Screw fasten the angle bracket with UA 100 profiles in the oblong holes of the lap using two adjacent screws M8 x 25 with washers and nuts. Subsequently screw fasten the profile UA 100 to the sides of the long flange of the angle bracket each with Ø 5.5 mm bolt screws.

The upper end of the balustrade is completed by a UW runner.

Cladding

Cladding on both sides with 2x 12.5 mm Diamant board covers. The fastening of the cladding to the studs is undertaken with Diamant screws at the following fastening spacings: lower layer ≤ 750 mm, upper layer ≤ 250 mm. Pay attention to the metal thickness of the profiles with the circumferential screw fastening and select suitable screws (XTN or XTB). Cut-out the lower cladding layer in the screw head area.

Fill the joints correctly and use an edge profile if required. Fill in screw heads as well.

Note

Static loads on the balustrades, e.g. from installed glass walls, are permissible up to a self weight of 150 kg/m. However, this requires the load to be applied to the middle and the constructional component to be connected in the ceiling area. Use suitable fasteners. Do not use screws with a cutting point.

Construction type I – Knauf profile UA 75 Connection to floor

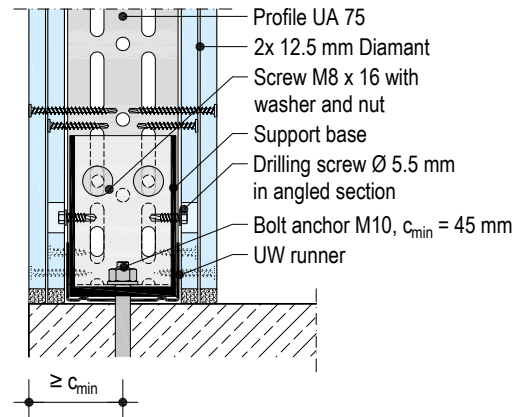
Scheme drawing

W175.de-VU2 Connection to floor

Scale 1:5



- UW runner
- Bolt anchor M10
- Support base
- Screw M8 x 16 with washer and nut
- Profile UA 75
- Drilling screw Ø 5.5 mm in angled section



Note

1. Cut-out the cladding layer in the screw head area.
2. Cladding layer continues through.

Head point

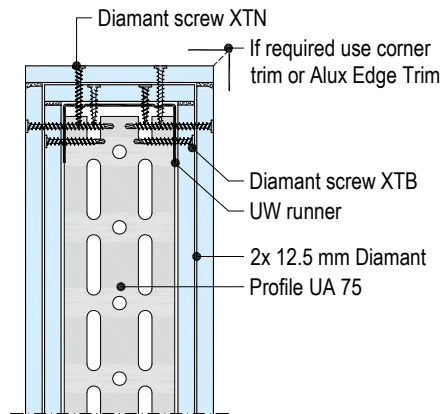
Scheme drawing

W175.de-VO2 Head point

Scale 1:5



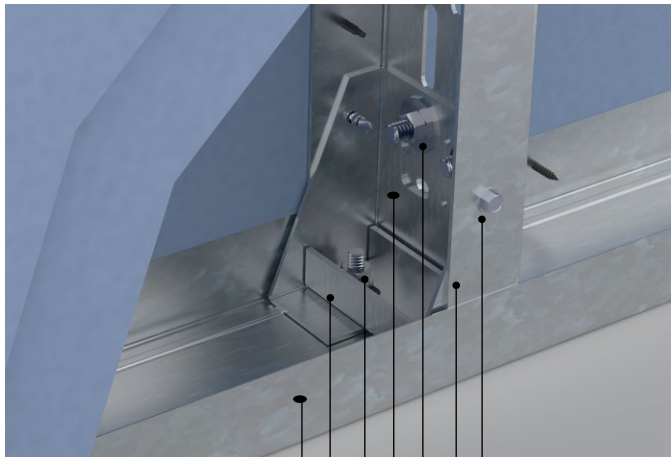
- 2x 12.5 mm Diamant
- Diamant Screw XTN
- Diamant Screw XTB
- Profile UA 75
- UW runner



Construction type II – Knauf profile UA 100

Connection to floor

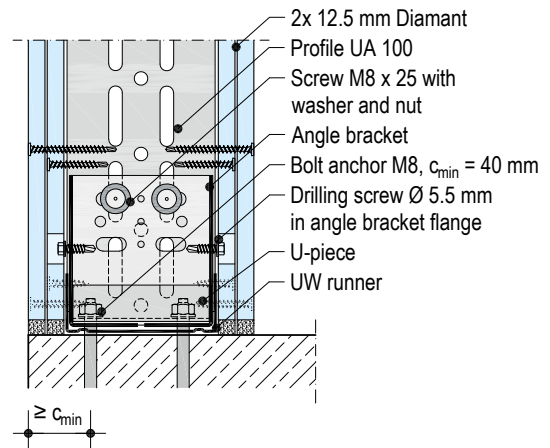
Scheme drawing



- UW runner
- U-piece
- Bolt anchor M8
- Angle bracket
- Screw M8 x 25 with washer and nut
- Profile UA 100
- Drilling screw Ø 5.5 mm in angle bracket flange

W175.de-VU1 Connection to floor

Scale 1:5



- 2x 12.5 mm Diamant
- Profile UA 100
- Screw M8 x 25 with washer and nut
- Angle bracket
- Bolt anchor M8, $c_{min} = 40$ mm
- Drilling screw Ø 5.5 mm in angle bracket flange
- U-piece
- UW runner

Note

1. Cut-out the cladding layer in the screw head area.
2. Cladding layer continues through.

Head point

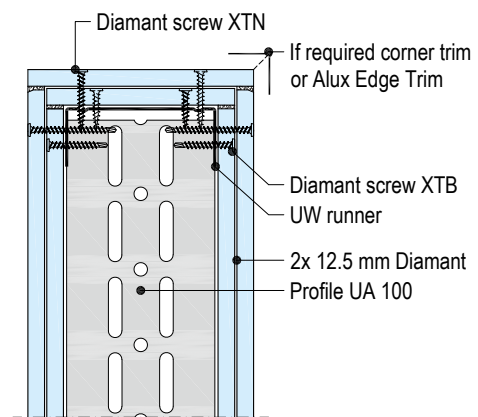
Scheme drawing

W175.de-VO1 Head point

Scale 1:5



- Diamant Screw XTN
- 2x 12.5 mm Diamant
- Diamant Screw XTB
- Profile UA 100
- UW runner



- Diamant screw XTN
- If required corner trim or Alux Edge Trim
- Diamant screw XTB
- UW runner
- 2x 12.5 mm Diamant
- Profile UA 100

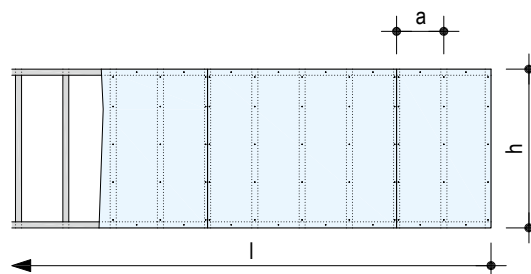
Material requirement per m balustrade without allowance for loss and waste

Designation	Unit	Quantity as average value					
		1	2	3	4	5	6
Stud frame							
Knauf profile UW 75 or UW 100	m	2.0	2.0	2.0	2.0	2.0	2.0
Suitable anchors, e.g. Knauf Nailable Plugs (Constructional anchoring)	pcs	1.0	1.0	1.0	1.0	1.0	1.0
Knauf profile UA 75 or UA 100	m	3.3	2.5	1.7	4.0	3.0	2.0
Fastening kit for UA 75	kit	3.3	2.5	1.7	3.3	2.5	1.7
Alternative Fastening kit for UA 100	kit	1.7	1.3	0.9	1.6	1.2	0.8
Knauf boards							
Diamant	m ²	4.3	4.3	4.3	5.1	5.1	5.1
Screw fastening							
1st. layer							
Diamant screw XTN 3.9 x 23 (in UW runner)	pcs	9	9	9	9	9	9
Diamant screw XTB 3.9 x 38 (in UA profile)	pcs	24	19	14	24	19	14
2nd. layer							
Diamant screw XTN 3.9 x 38 (in UW runner)	pcs	24	25	25	25	25	25
Diamant screw XTB 3.9 x 55 (in UA profile)	pcs	40	32	24	48	38	29
Jointing							
Knauf filling compound, e.g. Uniflott	kg	1.8	1.8	1.8	2.0	2.0	2.0
Trenn-Fix, 65 mm wide, self-adhesive	m	as req.	as req.	as req.	as req.	as req.	as req.
Knauf edge/corner trims; e.g. Kantenschutzprofil edge trim 23/13	m	as req.	as req.	as req.	as req.	as req.	as req.

The quantity relates to a balustrade length of: $l = 10.00$ m

Legend:

as req. = as required



System examples for material estimation

Construction dimensions	Variants					
	1	2	3	4	5	6
Balustrade height h	0.90 m	0.90 m	0.90 m	1.10 m	1.10 m	1.10 m
Stud spacing a	312.5 mm	417 mm	625 mm	312.5 mm	417 mm	625 mm
Board thickness	2x 12.5 mm	2x 12.5 mm	2x 12.5 mm	2x 12.5 mm	2x 12.5 mm	2x 12.5 mm

A screed height of 10 cm is considered for the calculation.



The Tablet App Knauf Infothek 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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Knauf Direct

Technical Advisory Service:

knauf-direkt@knauf.com

www.knauf.de

Knauf Gips KG Am Bahnhof 7, 97346 Iphofen, Germany

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