1 MVX / MVXL / -COR
2 MVX-OU/OD
3 ZVX / ZDX
4 DD / DDL / DVL
5 HT
6 AT / FT / OTX / FK
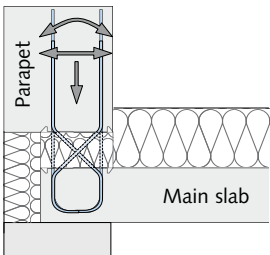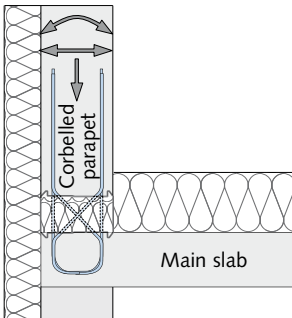7 ST / WT
8 BUILDING PHYSICS, PLANNING

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP AT, HIT-SP AT

6
> Insulated connections to form a thermal barrier between the main slab and a parapet or a corbelled parapet
> Transfer of normal forces as well as positive and negative shear forces and bending moments

CE   REI 120

Application: Floor slab with parapet

Application: Floor slab with high parapet or corbelled parapet

HIT-HP AT – **High Performance** with 80 mm insulation thickness
HIT-SP AT – **Superior Performance** with 120 mm insulation thickness

Content	Type	Page
Product variations / Load range	HIT-HP AT, HIT-SP AT	129
Product description	HIT-HP AT, HIT-SP AT	130
Calculation tables / Load bearing capacity values	HIT-HP AT, HIT-SP AT	132
Design example	HIT-HP AT, HIT-SP AT	134
On-site reinforcement	HIT-HP AT, HIT-SP AT	135

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP AT, HIT-SP AT

1 MVX / MVXL / -COR
2 MVX-OU/OD
3 ZVX / ZDX
4 DD / DDL / DVL
5 HT
6 AT / FT / OTX / FK
7 ST / WT
8 BUILDING PHYSICS, PLANNING

Product types – Load range

Possible combinations of shear bars and tension/compression loops are shown in the table below; includes using both HP and SP types of HIT Elements.

Possible combinations of structural elements			
Element width B = 25 cm		Number of tension/compression loops ⌀8 mm	
		2	3
Number of shear bars ⌀6	1	●	●
in both directions	2	●	●
Type		AT1	AT2
Applicable parapet heights H (without joint)		≥ 22 cm	≥ 30 cm
● = HP and SP			

Ordering example

HIT-HP	AT 2	-	0302	-	16	-	025
HIT-SP	AT 1	-	0201	-	25	-	025

❶ ❷ ❸ ❹❺ ❻ ❼

Type designation
① Product group
② Joint spacing 80 mm (HP) or 120 mm (SP)
③ Connection type
④ Number of tension/compression loops
⑤ Number of shear bars per side
⑥ Element height h [cm]
⑦ Element width B [cm]

Possible parapet width

Main slab
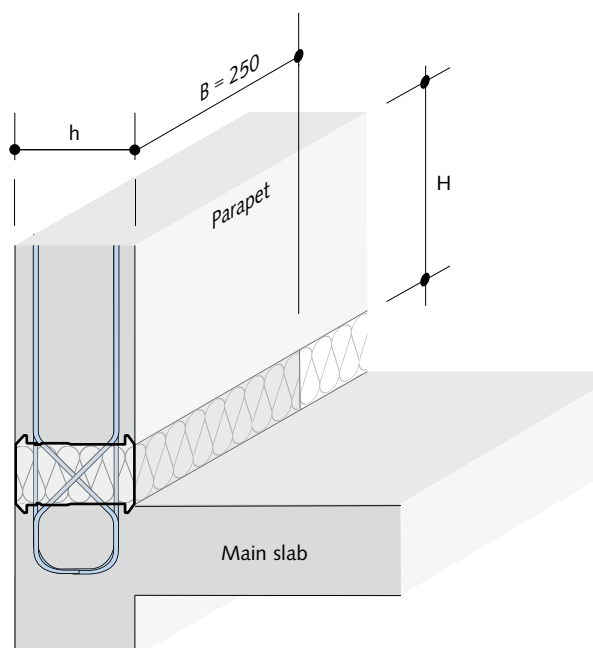
ℹ The illustration shows an application where the parapet width is identical to the height h of the HIT-AT Element.
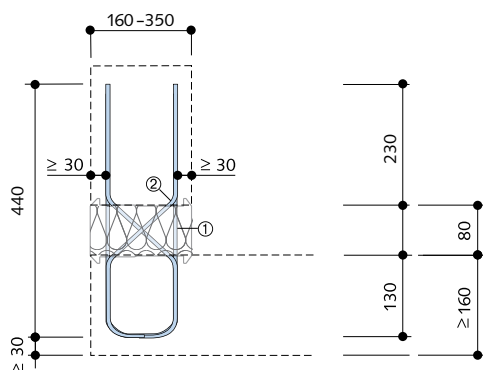
Possible slab thickness h [cm]	16 – 35*
Slab height	≥160 mm
*Load bearing capacity values for slab heights >25 cm available on request	

MVX / MVXL / -COR   1
MVX-OU/OD   2
ZVX / ZDX   3
DD / DDL / DVL   4
HT   5
AT / FT / OTX / FK   6
ST / WT   7
BUILDING PHYSICS, PLANNING   8

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP AT, HIT-SP AT
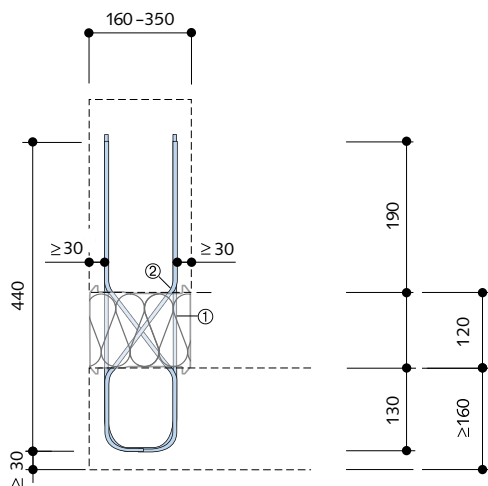
Cross section: HIT-HP AT1

HIT-HP AT2
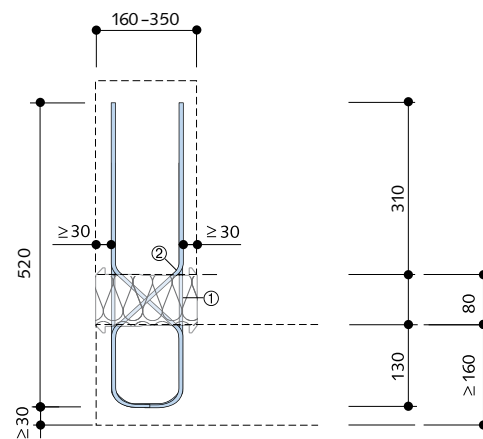
Dimensions in [mm]

Cross section: HIT-SP AT1

HIT-SP AT2
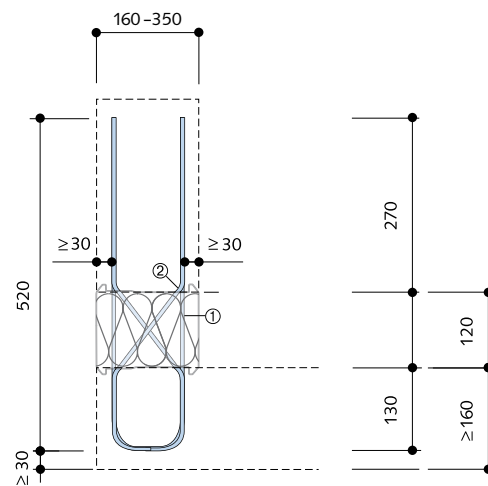
Dimensions in [mm]

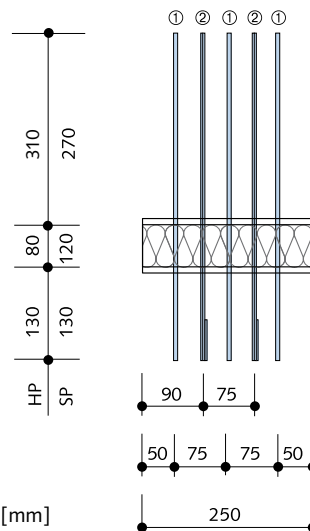**Top view: HIT-HP/SP AT1 – bar spacings**
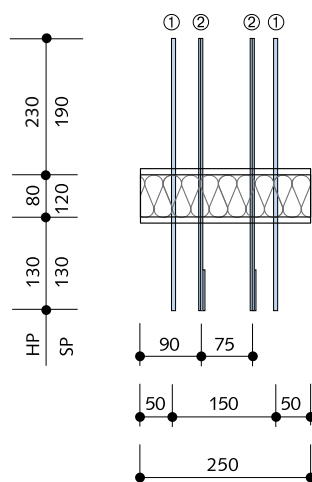
HIT-HP/SP AT2 – bar spacings

① Tension/compression loops:
∅ 8 mm, B500 NR

② Shear bars:
∅ 6 mm, B500 NR

① Tension/compression loops:
∅ 8 mm, B500 NR

② Shear bars:
∅ 6 mm, B500 NR

Dimensions in [mm]

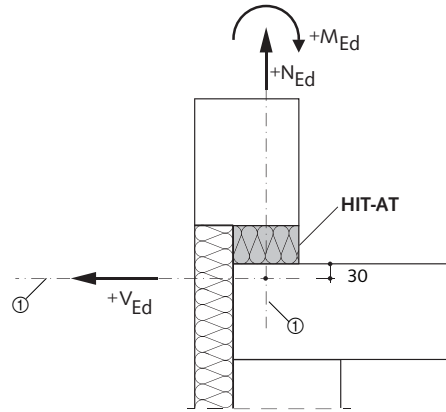# HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP AT, HIT-SP AT

1 MVX / MVXL / -COR
2 MVX-OU / OD
3 ZVX / ZDX
4 DD / DDL / DVL
5 HT
6 AT / FT / OTX / FK
7 ST / WT
8 BUILDING PHYSICS, PLANNING

Structural system

Sign convention for calculation
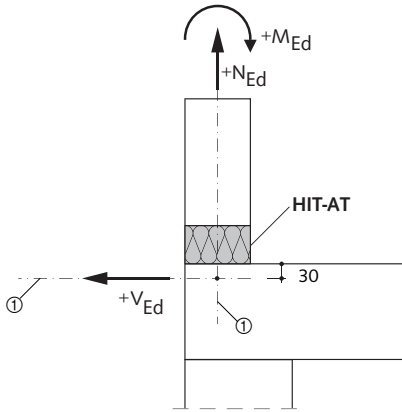
① Design section

① Design section

Dimensions in [mm]

Top view:

Roof slab with connected parapet

a = axial spacing according to structural requirements

on-site thermal insulation or filler HIT-FK (REI 120)
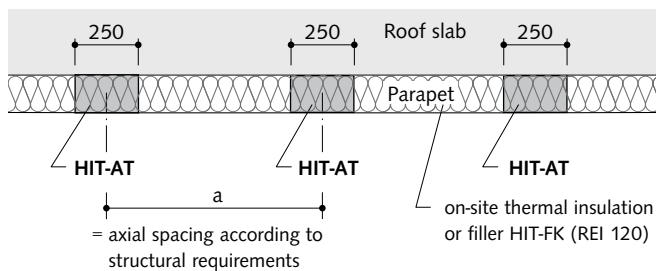
Determining the axial spacing a

Calculation of the maximum element spacing of the HIT-AT units is dependent on the effect of moment $\pm m_{Ed}$ [kNm/m], the normal force n_{Ed} [kN/m] and the shear load $\pm v_{Ed}$ [kN/m]

⇒ see table (page 132)

▶ **Step 1:** Determine the relationship (ratio) of the acting loads $|n_{Ed}/m_{Ed}|$ [1/m]

▶ **Step 2:** With $|n_{Ed}/m_{Ed}|$; select N_{Rd} from the **"Calculation tables"** depending on the element height h and the HIT-AT product type (AT1 or AT2). Intermediate values may be linearly interpolated.

▶ **Step 3:** Select the value for V_{Rd} in the table "**Load bearing capacity values**" for the respective HIT-AT variant depending on the element height h, of the selected product type, HIT-AT1 or HIT-AT2, and the shear load.

▶ **Step 4:** Calculate the element spacing a.
$$a_{max,1} = N_{Rd}/n_{Ed} \ [m]$$
$$a_{max,2} = V_{Rd}/v_{Ed} \ [m]$$
$$a = \min(a_{max,1}; a_{max,2})$$

▶ **Step 5:** **Check** the calculated load bearing capacities (per element).
(optional)
$$n_{Ed} \cdot a = N_{Ed} \leq N_{Rd}$$
$$m_{Ed} \cdot a = M_{Ed} \leq M_{Rd}$$
$$v_{Ed} \cdot a = V_{Ed} \leq V_{Rd}$$

MVX / MVXL / -COR
MVX-OU/OD
ZVX / ZDX
DD / DDL / DVL
HT
AT / FT / OTX / FK
ST / WT
BUILDING PHYSICS, PLANNING

1
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HALFEN HIT INSULATED CONNECTION HIGH PERFORMANCE
HIT-HP AT

Calculation tables

Calculation tables

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25

80

HIT-HP AT1	Element height h [mm]			
	160–170	180–190	200–210	220–250
$\lvert n_{Ed}/m_{Ed}\rvert$ [1/m]	N_{Rd} [kN/element]			
0	− 0.0	− 0.0	− 0.0	− 0.0
2	− 4.5	− 5.4	− 6.3	− 7.0
4	− 8.3	− 9.8	−11.1	−12.1
6	−11.4	−13.3	−15.0	−16.0
8	−14.2	−16.3	−18.2	−19.1
10	−16.5	−18.8	−20.9	−21.5
12	−18.5	−21.0	−23.2	−23.6
20	−24.7	−27.3	−29.5	−29.2
30	−29.5	−32.1	−34.3	−33.1
40	−32.8	−35.3	−37.2	−35.5
50	−35.1	−37.4	−39.3	−37.1
60	−36.8	−39.0	−40.8	−38.2

HIT-HP AT2	Element height h [mm]			
	160–170	180–190	200–210	220–250
$\lvert n_{Ed}/m_{Ed}\rvert$ [1/m]	N_{Rd} [kN/element]			
0	− 0.0	− 0.0	− 0.0	− 0.0
2	− 9.6	−11.5	−13.3	−14.8
4	−17.5	−20.7	−23.6	−25.6
6	−24.3	−28.2	−31.9	−33.8
8	−30.0	−34.5	−38.6	−40.4
10	−35.0	−39.9	−44.3	−45.7
12	−39.3	−44.5	−49.1	−50.0

ℹ️ Load bearing capacities for slab thicknesses > 25 cm are available on request. See inside back cover for contact information.

Load bearing capacity values according to EN 1992-1-1 (EC2)

V_{Rd} in both directions

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25

80

HIT-HP AT1	V_{Rd} [kN/element] for element height h [mm]			
	160–170	180–190	200–210	220–250
HIT-HP AT1-0201-hh-025	± 6.2		± 6.8	± 7.9
HIT-HP AT1-0202-hh-025	±12.4		±13.6	±15.8

HIT-HP AT2	V_{Rd} [kN/element] for element height h [mm]			
	160–170	180–190	200–210	220–250
HIT-HP AT2-0301-hh-025	± 7.9		± 8.7	±10.1
HIT-HP AT2-0302-hh-025	±15.8		±17.4	±20.1

M_{Rd} is dependent on N_{Rd}

HIT-HP AT1	M_{Rd} [kNm/element] for element height h [mm]			
N_{Rd} [kN/element]	160–170	180–190	200–210	220–250
0	±2.5	±3.0	±3.6	±4.1
− 5	±2.2	±2.7	±3.2	±3.7
−10	±2.0	±2.4	±2.9	±3.2
−15	±1.7	±2.1	±2.5	±2.8
−20	±1.5	±1.8	±2.2	±2.3
−25	±1.2	±1.5	±1.8	±1.8
−30	±1.0	±1.2	±1.4	±1.4

HIT-HP AT2	M_{Rd} [kNm/element] for element height h [mm]			
N_{Rd} [kN/element]	160–170	180–190	200–210	220–250
0	±5.3	±6.4	±7.6	±8.7
− 5	±5.0	±6.1	±7.2	±8.3
−10	±4.8	±5.8	±6.9	±7.8
−15	±4.5	±5.5	±6.5	±7.4
−20	±4.3	±5.2	±6.2	±6.9
−25	±4.0	±4.9	±5.8	±6.4
−30	±3.7	±4.6	±5.4	±6.0

HALFEN HIT INSULATED CONNECTION SUPERIOR PERFORMANCE
HIT-SP AT

1 MVX / MVXL / -COR
2 MVX-OU/OD
3 ZVX / ZDX
4 DD / DDL / DVL
5 HT
6 AT / FT / OTX / FK
7 ST / WT
8 BUILDING PHYSICS, PLANNING

Calculation tables

Calculation tables

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25   120

HIT-SP AT1	Element height h [mm]			
	160–170	180–190	200–210	220–250
$\lvert n_{Ed}/m_{Ed}\rvert$ [1/m]	N_{Rd} [kN/element]			
0	− 0.0	− 0.0	− 0.0	− 0.0
2	− 3.6	− 4.3	− 5.0	− 5.6
4	− 6.6	− 7.8	− 8.9	− 9.7
6	−9.2	−10.7	−12.0	−12.8
8	−11.3	−13.0	−14.6	−15.2
10	−13.2	−15.1	−16.7	−17.2
12	−14.8	−16.8	−18.5	−18.9
20	−19.7	−21.9	−23.6	−23.3
30	−23.6	−25.7	−27.4	−26.5
40	−26.2	−28.2	−29.8	−28.4
50	−28.1	−29.9	−31.4	−29.7
60	−29.4	−31.2	−32.6	−30.6

HIT-SP AT2	Element height h [mm]			
	160–170	180–190	200–210	220–250
$\lvert n_{Ed}/m_{Ed}\rvert$ [1/m]	N_{Rd} [kN/element]			
0	− 0.0	− 0.0	− 0.0	− 0.0
2	− 8.0	− 9.6	−11.1	−12.4
4	−14.7	−17.3	−19.8	−21.5
6	−20.3	−23.7	−26.7	−28.4
8	−25.2	−29.0	−32.4	−33.9
10	−29.3	−33.5	−37.1	−38.3
12	−33.0	−37.3	−41.2	−42.0

ℹ️ Load bearing capacities for slab thicknesses > 25 cm are available on request.
See inside back cover for contact information.

Load bearing capacity values according to EN 1992-1-1 (EC2)

V_{Rd} in both directions

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25   120

HIT-SP AT1	V_{Rd} [kN/element] for element height h [mm]			
	160–170	180–190	200–210	220–250
HIT-SP AT1-0201-hh-025	± 5.1		± 5.9	± 6.8
HIT-SP AT1-0202-hh-025	±10.2		±11.7	±13.6

HIT-SP AT2	V_{Rd} [kN/element] for element height h [mm]			
	160–170	180–190	200–210	220–250
HIT-SP AT2-0301-hh-025	± 6.5		± 7.5	± 8.7
HIT-SP AT2-0302-hh-025	±13.0		±15.0	±17.4

M_{Rd} is dependent on N_{Rd}

HIT-SP AT1	M_{Rd} [kNm/element] for element height h [mm]			
N_{Rd} [kN/element]	160–170	180–190	200–210	220–250
0	±2.0	±2.4	±2.9	±3.3
− 5	±1.7	±2.1	±2.5	±2.8
−10	±1.5	±1.8	±2.1	±2.4
−15	±1.2	±1.5	±1.8	±1.9
−20	±1.0	±1.2	±1.4	±1.5
−25	±0.7	±0.9	±1.1	±1.0
−30	±0.5	±0.6	±0.7	±0.6

HIT-SP AT2	M_{Rd} [kNm/element] for element height h [mm]			
N_{Rd} [kN/element]	160–170	180–190	200–210	220–250
0	±4.4	±5.4	±6.4	±7.3
− 5	±4.2	±5.1	±6.0	±6.9
−10	±3.9	±4.8	±5.6	±6.4
−15	±3.7	±4.5	±5.3	±5.9
−20	±3.4	±4.2	±4.9	±5.5
−25	±3.2	±3.9	±4.6	±5.0
−30	±2.9	±3.6	±4.2	±4.6

1 MVX / MVXL / -COR

2 MVX-OU/OD

3 ZVX / ZDX

4 DD / DDL / DVL

5 HT

6 AT / FT / OTX / FK

7 ST / WT

8 BUILDING PHYSICS, PLANNING

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP AT, HIT-SP AT

Design example

Planned: Joint width 12 cm
HIT-SP AT2

Required: Axial spacing a [m]

Assumed: H = 1.40 m
b_A = h = 0.20 m
h_l = 0.12 m

Determining the loads

$g_d = H \cdot b_A \cdot \rho_{concrete} \cdot \gamma_G$

$g_d = 1.40\,m \cdot 0.20\,m \cdot 25\,kN/m^3 \cdot 1.35 = 9.45\,kN/m$

Assumption: w_k = wind pressure + wind suction = 2.6 kN/m²
(To simplify calculation the parapet height
is assumed to be the same on both sides;
wind load / left = wind load / right)

$w_d = w_k \cdot (H + h_l + 0.03) \cdot \gamma_Q$

$w_d = 2.6\,kN/m^2 \cdot 1.55\,m \cdot 1.5 = 6.05\,kN/m$

$k = (0.03\,m + h_l + H) \cdot 0.5$

$k = (0.03\,m + 0.12\,m + 1.40\,m) \cdot 0.5 = 0.78\,m$

① Design section

....

Determining the axial spacing

n_{Ed} = −9.45 kN/m

m_{Ed} = 6.05 kN/m · 0.78 m = 4.72 kNm/m

v_{Ed} = −6.05 kN/m

Method / sign convention:
→ see page 131

Step 1: $|n_{Ed}/m_{Ed}|$ = |−9.45/4.72| = 2.00 [1/m]

Step 2: N_{Rd} = −11.1 kN/element

Step 3: V_{Rd} = ±7.5 kN/element   (for HIT-SP AT2-0301-20-025)

Step 4: a_{max1} = −11.1/−9.45   = 1.17 m
a_{max2} = −7.5/−6.05   = 1.23 m
⟹ **a = 1.17 m**

Step 5: N_{Ed} = −9.45 · 1.17 = −11.06 kN/element
M_{Ed} = 4.72 · 1.17 = 5.52 kNm/element < M_{Rd} = 5.54 kNm/element
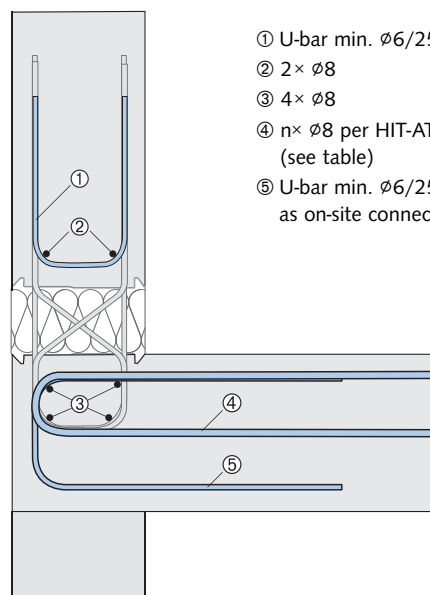V_{Ed} = −6.05 · 1.17 = −7.08 kN/element < V_{Rd} = −7.5 kN/element

⟹ HIT-SP AT2-0301-20-025 with a maximum spacing of 1.17 m.

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP AT, HIT-SP AT

1 MVX / MVXL / -COR
2 MVX-OU/OD
3 ZVX / ZDX
4 DD / DDL / DVL
5 HT
6 AT / FT / OTX / FK
7 ST / WT
8 BUILDING PHYSICS, PLANNING

On-site reinforcement HIT-AT

① U-bar min. ∅6/25 cm
② 2× ∅8
③ 4× ∅8
④ n× ∅8 per HIT-AT Element
  (see table)
⑤ U-bar min. ∅6/25 cm
  as on-site connecting reinforcement
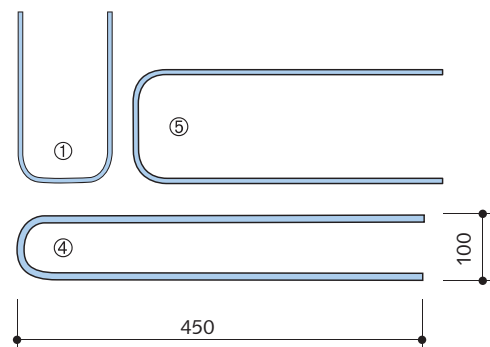
| HIT-HP AT	Number **n** connecting bars ④
HIT-HP AT1	3
HIT-HP AT2	4
HIT-SP AT	Number **n** connecting bars ④
HIT-SP AT1	3
HIT-SP AT2	3

Edge distances

⚠ **Edge distance**

The HIT-AT Element can be installed flush with the concrete edge at the end of the parapet. The minimal distance from the side edge of the main concrete slab to the HIT-AT is 55 mm.
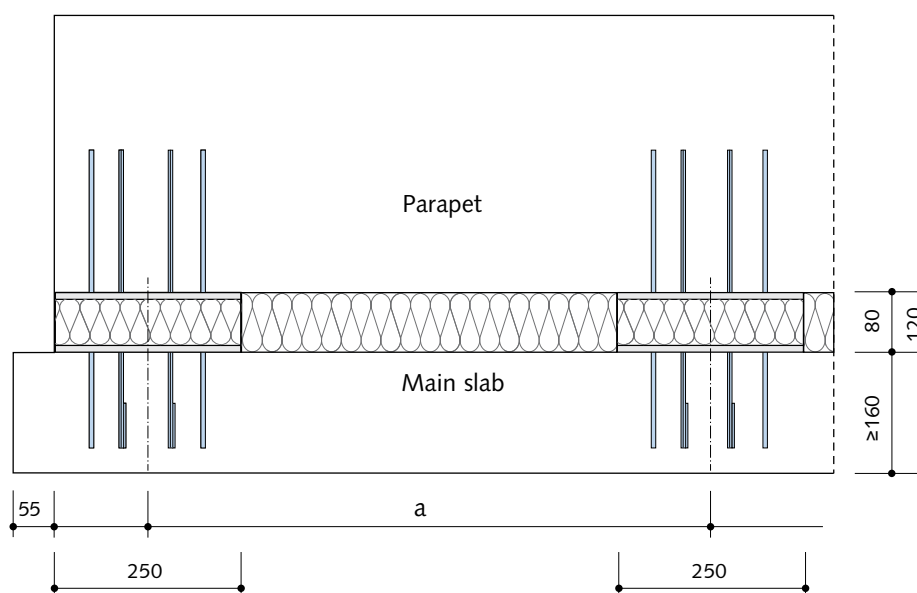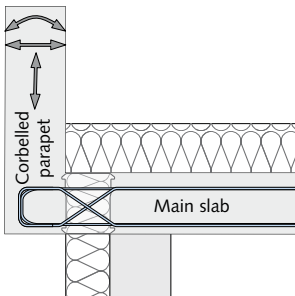
Parapet

Main slab

ℹ Installation instructions can be found on our website; **www.halfen.com**.

1 MVX / MVXL / -COR

2 MVX-OU/OD

3 ZVX / ZDX

4 DD / DDL / DVL

5

HT

6 AT / FT / OTX / FK

7 ST / WT

8 BUILDING PHYSICS, PLANNING

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP FT, HIT-SP FT

> Thermal insulated connections for application between the main slab and corbelled parapet
> Transfer of normal forces as well as shear forces and bending moments
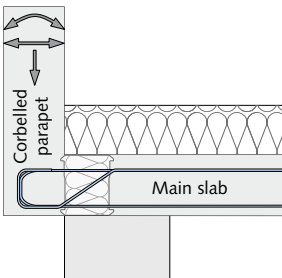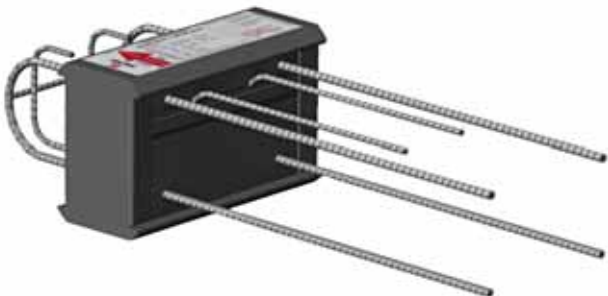
Cross section:
Main slab with corbelled parapet
and thermal insulating masonry

Cross section:
Main slab with corbelled parapet
and external thermal insulation composite system

HIT-HP FT   – **High Performance** with 80 mm insulation thickness
HIT-SP FT   – **Superior Performance** with 120 mm insulation thickness

Content	Type	Page
Product variations / Load range	HIT-HP FT, HIT-SP FT	137
Product description	HIT-HP FT, HIT-SP FT	138
Calculation tables / Load bearing capacity values	HIT-HP FT, HIT-SP FT	140
On-site reinforcement	HIT-HP FT, HIT-SP FT	142

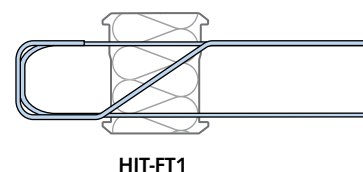# HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP FT, HIT-SP FT

Product types – Load range

Listed in the table below are possible combinations of shear bars and
tension/compression loops; this includes HIT Elements type HP and SP.

HIT-FT1: Possible combinations of structural elements		Number of tension/compression loops $\varnothing 8$
Element width B = 25 cm		2
Number of shear bars $\varnothing 6$ in one direction	2	●
	3	●
● = HP and SP		

HIT-FT1

HIT-FT2: Possible combinations of structural elements		Number of tension/compression loops $\varnothing 8$
Element width B = 25 cm		2
Number of shear bars $\varnothing 6$ in both directions	2	●
	3	●
● = HP and SP		

HIT-FT2
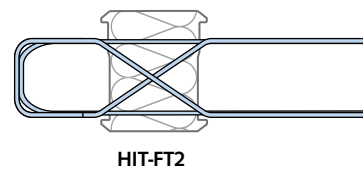
Ordering example

```
HIT-HP  FT1 - 02 02 - 16 - 025
HIT-SP  FT2 - 02 03 - 25 - 025
  ❶   ❷    ❸   ❹ ❺   ❻    ❼
```

Type designation
① Product group
② Joint spacing 80 mm (HP) or 120 mm (SP)
③ Connection type
④ Number of tension/compression loops
⑤ Number of shear bars per side
⑥ Element height h [cm]
⑦ Element width B [cm]
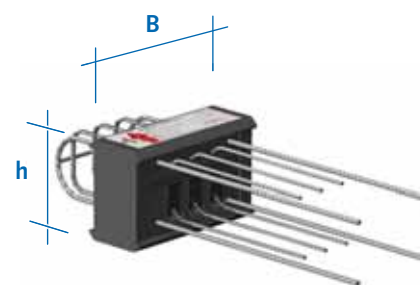
Corbelled parapets, available widths

Possible slab thickness h [cm]	16 – 35*
Corbelled parapets, width [cm]	≥ 15
*Load bearing capacities for slab thicknesses > 25 cm available on request	

1 MVX / MVXL / -COR
2 MVX-OU/OD
3 ZVX / ZDX
4 DD / DDL / DVL
5 HT
6 AT / FT / OTX / FK
7 ST / WT
8 BUILDING PHYSICS, PLANNING

1 MVX / MVXL / -COR

2 MVX-OU/OD

3 ZVX / ZDX

4 DD / DDL / DVL

5 HT

6 AT / FT / OTX / FK

7 ST / WT

8 BUILDING PHYSICS, PLANNING

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP FT, HIT-SP FT

Product description – cross sections and top views

Cross section:
HIT-HP FT1

130 80 410
620
≥150
160–350
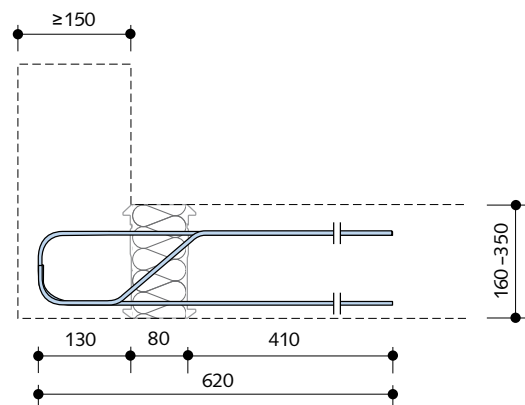
Dimensions in [mm]

HIT-HP FT2

130 80 410
620
≥150
160–350

Cross section:
HIT-SP FT1

130 120 370
620
≥150
160–350

Dimensions in [mm]

HIT-SP FT2

130 120 370
620
≥150
160–350
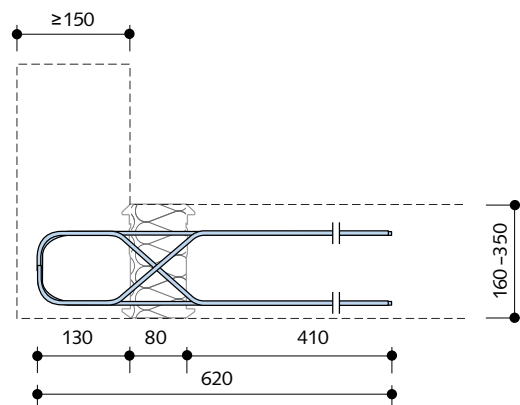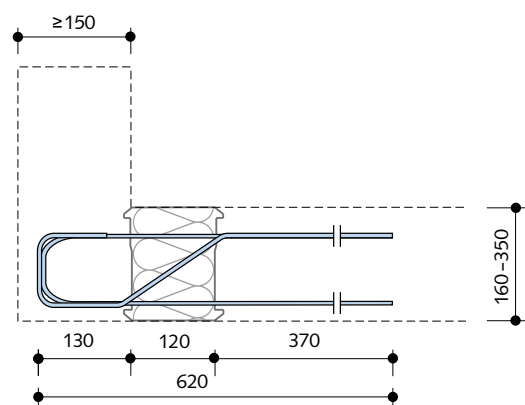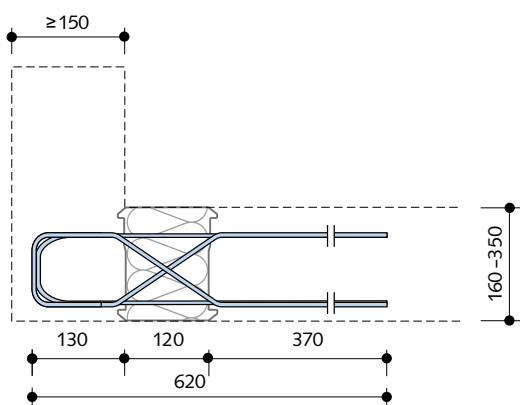
Top view:
HIT-HP/SP FT1 – Bar spacings
HIT-HP/SP FT2 – Bar spacings

❯ 2 Shear bars
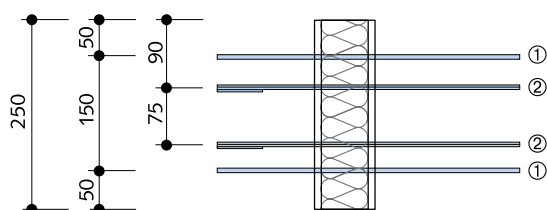
250 50 90 150 75 50 ① ② ② ①

❯ 3 Shear bars

250 50 80 150 90 50 ① ② ② ② ①

Dimensions in [mm]
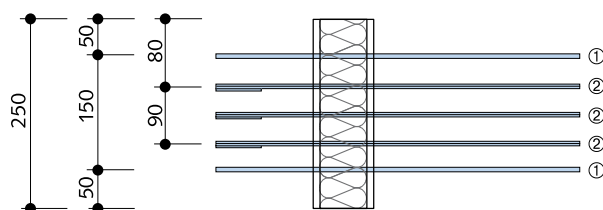
① Tension/compression loops: ∅8 mm, B500 NR
② Shear bars: ∅6 mm, B500 NR,
   with type HIT-FT1 only in one direction

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HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP FT, HIT-SP FT

1 MVX/MVXL/-COR

2 MVX-OU/OD

3 ZVX/ZDX

4 DD/DDL/DVL

5 HT

6 AT/FT/OTX/FK

7 ST/WT

8 BUILDING PHYSICS, PLANNING

Structural system

Sign convention for calculation

① Design section
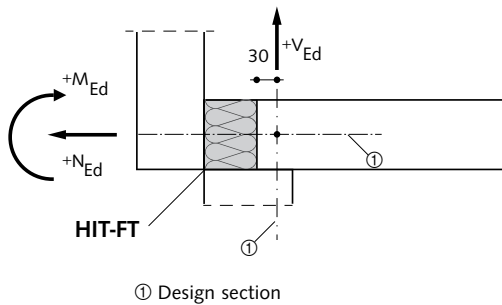
Dimensions in [mm]

Top view:
Main slab with attached corbelled parapet

= axial spacing according to structural requirements
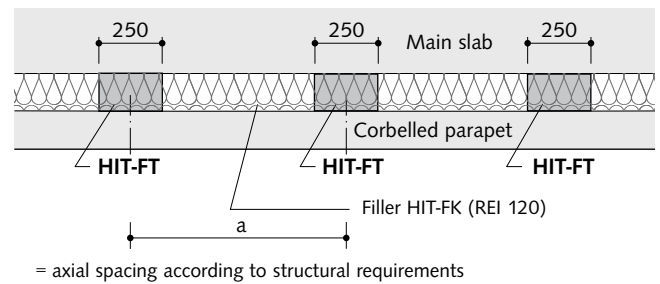
Determining of axial spacing a

Calculation of the maximum element spacing of the HIT-FT units is dependent on the effect of moment $\pm m_{Ed}$ [kNm/m], the normal force n_{Ed} [kN/m] and the shear load $\pm v_{Ed}$ [kN/m]

⇨ **see table (page 140)**

▶ **Step 1:** Determine the relationship (ratio) of the acting loads $n_{Ed}/|m_{Ed}|$ [1/m]

▶ **Step 2:** With $n_{Ed}/|m_{Ed}|$ select N_{Rd} from the **"Calculation tables"**, depending on the element height h and the HIT-FT product type (HIT-FT1 or HIT-FT2). Intermediate values may be linearly interpolated.

▶ **Step 3:** Select the value for V_{Rd} in the table "**Load bearing capacity values**" for the respective HIT-FT variant depending on the element height h, the concrete strength class and the shear load in the main slab.

▶ **Step 4:** Calculate the element spacing a
$$a_{max,1} = N_{Rd}/n_{Ed} \quad [m]$$
$$a_{max,2} = V_{Rd}/v_{Ed} \quad [m]$$
$$a = \min(a_{max,1}\,;\,a_{max,2})$$

▶ **Step 5:** **Check** the calculated load bearing capacities (per element).
   (optional)
$$n_{Ed} \cdot a = N_{Ed} \leq N_{Rd}$$
$$m_{Ed} \cdot a = M_{Ed} \leq M_{Rd}$$
$$v_{Ed} \cdot a = V_{Ed} \leq V_{Rd}$$

1 MVX / MVXL / -COR
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7 ST / WT
8 BUILDING PHYSICS, PLANNING

HALFEN HIT INSULATED CONNECTION HIGH PERFORMANCE
HIT-HP FT

Calculation tables

Calculation tables

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25

80

HIT-HP FT1 HIT-HP FT2	+N_{Rd}* [kN/element]			
	Element height h [mm]			
n_{Ed}/|m_{Ed}| [1/m]	160–170	180–190	200–210	220–250
+50	56.6	60.4	63.4	59.9
+40	52.9	56.9	60.1	57.3
+30	47.7	51.9	55.3	53.4
+20	39.8	44.1	47.7	47.1
+12	29.9	33.9	37.4	38.1
+10	26.6	30.4	33.7	34.8
+ 8	22.8	26.3	29.4	30.8
+ 6	18.5	21.5	24.3	25.8
+ 4	13.4	15.7	18.0	19.5
+ 2	7.3	8.7	10.1	11.2
0	0.0	0.0	0.0	0.0

HIT-HP FT1 HIT-HP FT2	−N_{Rd}* [kN/element]			
	Element height h [mm]			
n_{Ed}/|m_{Ed}| [1/m]	160–170	180–190	200–210	220–250
− 2	−6.4	−7.6	−8.8	−9.8
− 4	−11.7	−13.8	−15.7	−17.1
− 6	−16.2	−18.8	−21.2	−22.6
− 8	−20.0	−23.0	−25.8	−26.9
−10	−23.3	−26.6	−29.5	−30.4
−12	−26.2	−29.7	−32.7	−33.4
−20	−34.8	−38.6	−41.7	−41.2
−30	−41.7	−45.4	−48.4	−46.8
−40	−46.3	−49.8	−52.6	−50.1
−50	−49.6	−52.9	−55.5	−52.4

ℹ Load bearing capacities for slab thicknesses > 25 cm are available on request.
See inside back cover for contact information.

⚠ * Sign convention → see page 139

Load bearing capacity values according to EN 1992-1-1 (EC2)

V_{Rd} in one direction

HIT-HP FT1	V_{Rd} [kN/element] for element height h [mm]		
	160–190	200–210	220–250
HIT-HP FT1-0202-hh-025	−13.6 −15.8	−15.0 −17.4	−17.4 −20.1
HIT-HP FT1-0203-hh-025	−20.4 −20.4	−22.5 −26.1	−26.0 −26.0

V_{Rd} in both directions

Parapet: ≥ C25/30
Main slab: C20/25 ≥ C25/30

80

HIT-HP FT2	V_{Rd} [kN/element] for element height h [mm]		
	160–190	200–210	220–250
HIT-HP FT2-0202-hh-025	±13.6 ±15.8	±15.0 ±17.4	±17.4 ±20.1
HIT-HP FT2-0203-hh-025	±20.4 ±20.4	±22.5 ±26.1	±26.0 ±26.0

M_{Rd} is dependent on N_{Rd}

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25

HIT-HP FT1 HIT-HP FT2	M_{Rd} [kNm/element] for element height h [mm]			
+N_{Rd}* [kN/element]	160–170	180–190	200–210	220–250
70	±0.5	±0.6	±0.8	±0.3
60	±1.0	±1.2	±1.5	±1.2
50	±1.5	±1.8	±2.2	±2.1
40	±2.0	±2.5	±2.9	±3.0
30	±2.5	±3.1	±3.6	±3.9
25	±2.7	±3.4	±4.0	±4.4
20	±3.0	±3.7	±4.3	±4.8
15	±3.3	±4.0	±4.7	±5.3
10	±3.5	±4.3	±5.1	±5.7
5	±3.7	±4.5	±5.4	±6.1

HIT-HP FT1 HIT-HP FT2	M_{Rd} [kNm/element] for element height h [mm]			
−N_{Rd}* [kN/element]	160–170	180–190	200–210	220–250
0	±3.5	±4.3	±5.0	±5.8
− 5	±3.3	±4.0	±4.7	±5.4
−10	±3.0	±3.7	±4.3	±4.9
−15	±2.8	±3.4	±4.0	±4.4
−20	±2.5	±3.1	±3.6	±4.0
−25	±2.2	±2.8	±3.3	±3.5
−30	±2.0	±2.5	±2.9	±3.1
−35	±1.7	±2.1	±2.6	±2.6
−40	±1.5	±1.8	±2.2	±2.2
−45	±1.2	±1.5	±1.9	±1.7
−50	±1.0	±1.2	±1.5	±1.3

1 MVX / MVXL / -COR
2 MVX-OU/OD
3 ZVX / ZDX
4 DD / DDL / DVL
5 HT
6 AT / FT / OTX / FK
7 ST / WT
8 BUILDING PHYSICS, PLANNING

HALFEN HIT INSULATED CONNECTION SUPERIOR PERFORMANCE
HIT-SP FT

Calculation tables

Calculation tables

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25   120

HIT-SP FT1 HIT-SP FT2	+N$_{Rd}$* [kN/element]			
	Element height h [mm]			
n$_{Ed}$ / |m$_{Ed}$| [1/m]	160–170	180–190	200–210	220–250
+**50**	56.6	60.4	63.4	59.9
+**40**	52.9	56.9	60.1	57.3
+**30**	47.7	51.9	55.3	53.4
+**20**	39.8	44.1	47.7	47.1
+**12**	29.9	33.9	37.4	38.1
+**10**	26.6	30.4	33.7	34.8
+ **8**	22.8	26.3	29.4	30.8
+ **6**	18.5	21.5	24.3	25.8
+ **4**	13.4	15.7	18.0	19.5
+ **2**	6.4	8.0	9.6	11.1
0	0.0	0.0	0.0	0.0

HIT-SP FT1 HIT-SP FT2	−N$_{Rd}$* [kN/element]			
	Element height h [mm]			
n$_{Ed}$ / |m$_{Ed}$| [1/m]	160–170	180–190	200–210	220–250
− **2**	− 5.4	− 6.4	− 7.4	− 8.3
− **4**	− 9.8	−11.6	−13.2	−14.3
− **6**	−13.6	−15.8	−17.8	−18.9
− **8**	−16.8	−19.3	−21.6	−22.6
−**10**	−19.5	−22.3	−24.8	−25.5
−**12**	−22.0	−24.9	−27.4	−28.0
−**20**	−29.2	−32.4	−35.0	−34.6
−**30**	−35.0	−38.1	−40.6	−39.2
−**40**	−38.8	−41.8	−44.1	−42.0
−**50**	−41.6	−44.4	−46.5	−43.9

ℹ Load bearing capacities for slab thicknesses > 25 cm are available on request.
See inside back cover for contact information.

⚠ * Sign convention → see page 139

Load bearing capacity values according to EN 1992-1-1 (EC2)

V$_{Rd}$ in one direction

HIT-SP FT1	V$_{Rd}$ [kN/element] for element height h [mm]		
	160–190	200–210	220–250
HIT-SP FT1-0202-hh-025	−11.2 −13.0	−12.9 −15.0	−15.0 −17.4
HIT-SP FT1-0203-hh-025	−16.8 −19.5	−19.3 −22.5	−22.5 −26.1

V$_{Rd}$ in both directions   Parapet: ≥C25/30
Main slab: C20/25   ≥C25/30   120

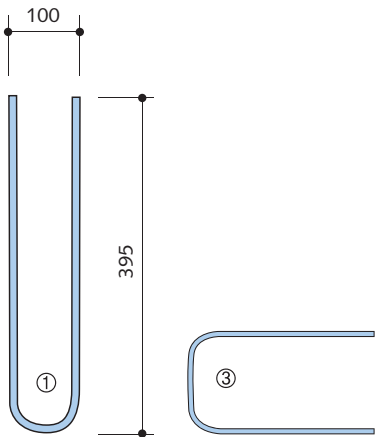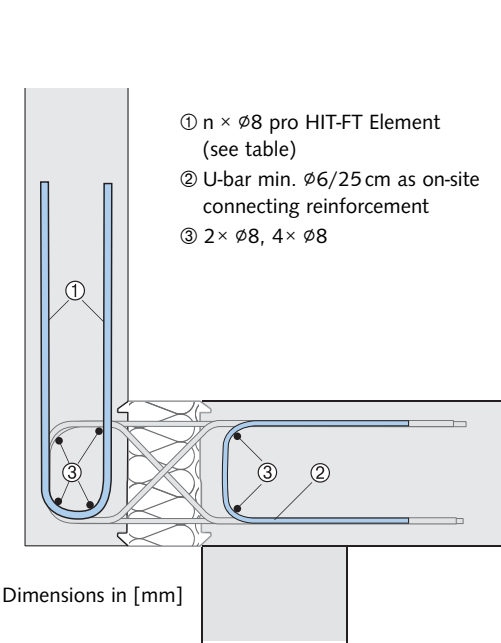| HIT-SP FT2	V$_{Rd}$ [kN/element] for element height h [mm]		
	160–190	200–210	220–250
HIT-SP FT2-0202-hh-025	±11.2 ±13.0	±12.9 ±15.0	±15.0 ±17.4
HIT-SP FT2-0203-hh-025	±16.8 ±19.5	±19.3 ±22.5	±22.5 ±26.1

M$_{Rd}$ is dependent on N$_{Rd}$

Concrete strength: Parapet ≥ C25/30
Main slab ≥ C20/25

HIT-SP FT1 HIT-SP FT2	M$_{Rd}$ [kNm/element] for element height h [mm]			
+N$_{Rd}$* [kN/element]	160–170	180–190	200–210	220–250
70	±0.5	±0.6	±0.8	±0.3
60	±1.0	±1.2	±1.5	±1.2
50	±1.5	±1.8	±2.2	±2.1
40	±2.0	±2.5	±2.9	±3.0
30	±2.5	±3.1	±3.6	±3.9
25	±2.7	±3.4	±4.0	±4.4
20	±3.0	±3.7	±4.3	±4.8
15	±3.3	±4.0	±4.7	±5.3
10	±3.4	±4.1	±4.8	±5.5
5	±3.2	±3.8	±4.5	±5.2

HIT-SP FT1 HIT-SP FT2	M$_{Rd}$ [kNm/element] for element height h [mm]			
−N$_{Rd}$* [kN/element]	160–170	180–190	200–210	220–250
0	±3.0	±3.6	±4.2	±4.9
− **5**	±2.7	±3.3	±3.9	±4.4
−**10**	±2.4	±3.0	±3.5	±4.0
−**15**	±2.2	±2.7	±3.2	±3.5
−**20**	±1.9	±2.4	±2.8	±3.1
−**25**	±1.7	±2.1	±2.5	±2.6
−**30**	±1.4	±1.8	±2.1	±2.1
−**35**	±1.2	±1.5	±1.7	±1.7
−**40**	±0.9	±1.2	±1.4	±1.2
−**45**	±0.7	±0.8	±1.0	±0.8
−**50**	±0.4	±0.5	±0.7	±0.3

MVX / MVXL /-COR 1

MVX-OU/OD 2

ZVX / ZDX 3

DD / DDL / DVL 4

HT 5

AT / FT / OTX / FK 6

ST / WT 7

BUILDING PHYSICS, PLANNING 8

HALFEN HIT INSULATED CONNECTION HIGH & SUPERIOR PERFORMANCE
HIT-HP FT, HIT-SP FT

On-site reinforcement HIT-FT

① n × ∅8 pro HIT-FT Element (see table)
② U-bar min. ∅6/25 cm as on-site connecting reinforcement
③ 2× ∅8, 4× ∅8

Dimensions in [mm]

HIT Type	Number of shear bars	Number n connecting bars ①
HIT-HP FT1 HIT-HP FT2	2	3
	3	4
HIT-SP FT1 HIT-SP FT2	2	3
	3	4

Edge distances

⚠ **Edge distances**

The HIT-FT Element can be installed flush with the concrete edge at the end of the parapet. The minimal distance from the side edge of the main concrete slab to the HIT-FT is 55 mm.

Corbelled parapet

Main slab

Dimensions in [mm]

ⓘ Installation instructions can be found on our website **www.halfen.com**.