

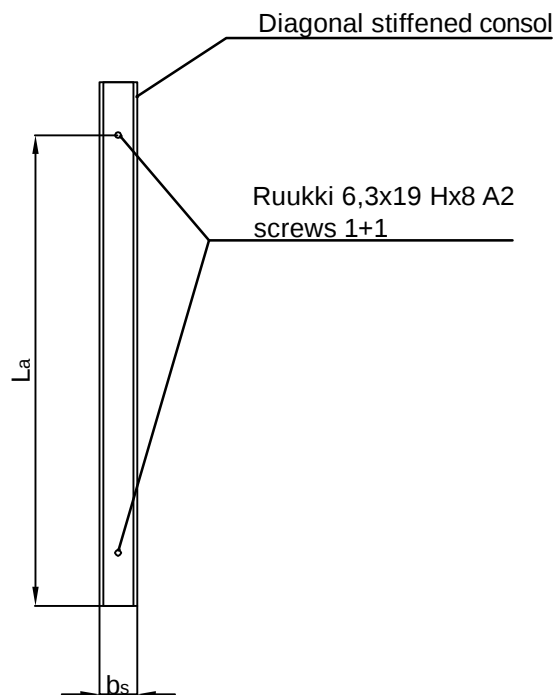
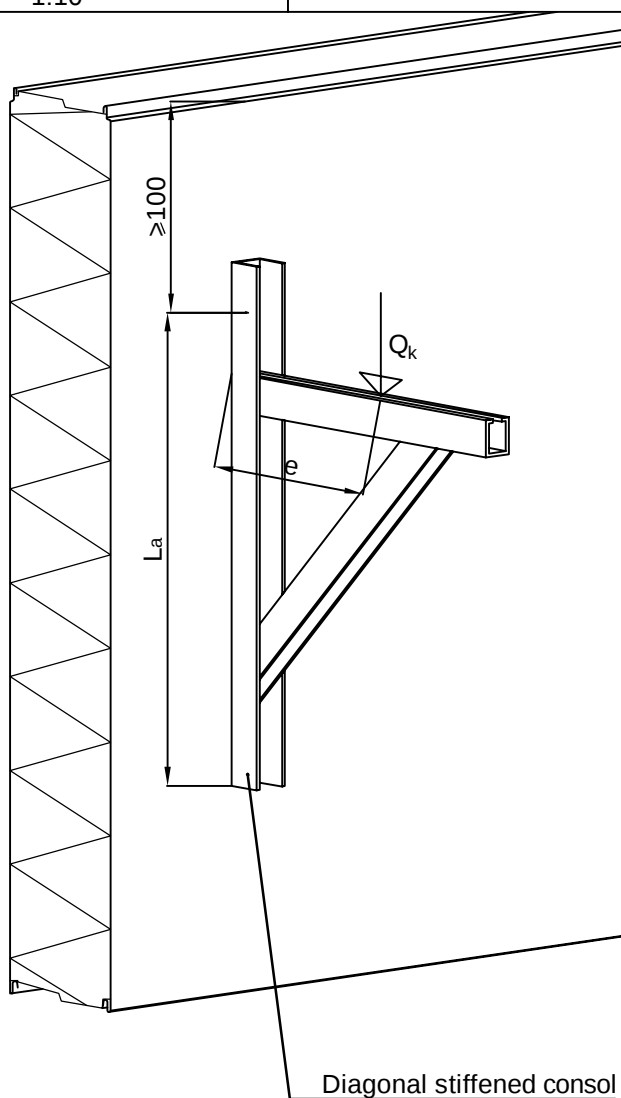
City sector	Block	Site/Reg. nr.	File nr.		
Building type			Drawing type		
Building, Name and address			Contents of drawing		Scale
 Ruukki Construction Oy Panuntie 11 00620 HELSINKI FINLAND tel. +358 (0) 20 59 150 www.ruukki.com			Sandwich panel SPA, nSPB, SP2B and SP2E Attachments to panel surface		
Date	16.09.2026	Designer	Work nr.	Work nr.	Drw. nr.
Drawn by	Ruukki	Checked			Rev.



Contents of drawing

Sandwich panel SPA, nSPB, SP2B, and SP2E
Consol detail
Direct

Date 16.09.2026	Rev. date	Work nr.	Drawing nr. SP60-1A-EN
Drawn by Ruukki	Rev.		
Scale 1:10	Building		File nr.



L_a [mm] = Distance from the end of the support to the upper screw
 e [mm] = Distance from the load center to the panel surface
 b_s [mm] = Width of the support profile
 Q_k [kN] = Characteristic load for one consol, always less than 0,5 kN.
 q_k [kN] = Continuous characteristic load from several consols



Contents of drawing

Sandwich panel SPA, nSPB, SP2B, and SP2E
Consol detail
Direct

Date 16.09.2026	Rev. date	Work nr.	Drawing nr. SP60-1B-EN
Drawn by Ruukki	Rev.		
Scale 1:1	Building	File nr.	

Panel compression design strength values

Panel types	f_{Ccd} [N/mm ²]
SPA E, F, S	0,040
SPA I, EE	0,029
SPA E-LIFE	0,036
nSPB WE, W, WF, WS	0,037
nSPB WEE	0,027
SP2B, SP2E	0,035

Screw connection design values for different panel faces

Screw type: Ruukki 6,3x19 Hx8 A2	0,5 mm		0,6 mm	
	R_{td} [kN]	R_{vd} [kN]	R_{td} [kN]	R_{vd} [kN]
SPA and nSPB panels	0,70	1,14	0,79	1,17
SP2B and SP2E panels	0,35	0,57	0,40	0,59

Resistance of one consol in panel sheet of 0,5 mm

Connection capacity for SPA and nSPB types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,60+2,31 \cdot \frac{e}{L_a}}$$

Connection capacity for SP2B and SP2E types:

$$Q_k \text{ [kN]} \leq \frac{1}{1,20+4,61 \cdot \frac{e}{L_a}}$$

Compression capacity:

$$Q_k \text{ [kN]} \leq \frac{0,15 \cdot f_{Ccd} \cdot L_a^2 \cdot (b_s+30)}{1000 \cdot e}$$

Minimum steel thickness must be 2mm.

The utilization rate of bending moment against wind pressure must be limited to 85%. Ruukki's dimensioning program TrayPan does the checking automatically.

Resistance of one consol in panel sheet of 0,6 mm

Connection capacity for SPA and nSPB types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,58+2,05 \cdot \frac{e}{L_a}}$$

Connection capacity for SP2B and SP2E types:

$$Q_k \text{ [kN]} \leq \frac{1}{1,16+4,10 \cdot \frac{e}{L_a}}$$

Compression capacity:

$$Q_k \text{ [kN]} \leq \frac{0,15 \cdot f_{Ccd} \cdot L_a^2 \cdot (b_s+30)}{1000 \cdot e}$$

Panel global capacity check for horizontal installed panels

Maximum moment criteria

Panel types	SPA F, S	SPA E, E-LIFE, I, EE	nSPB W, WF, WS	nSPB WEE, WE	SP2B, SP2E
q_k [kN/m] ≤	250/e	200/e	150/e	100/e	100/e

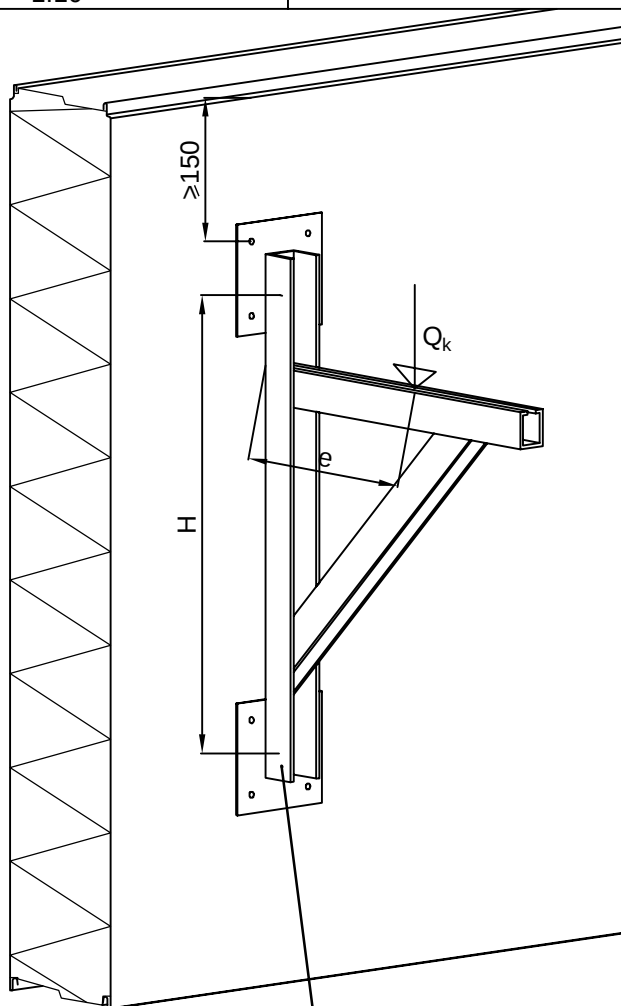
Panel support reaction capacity and panel screw connection capacity together with other loadings to be checked using Traypan program



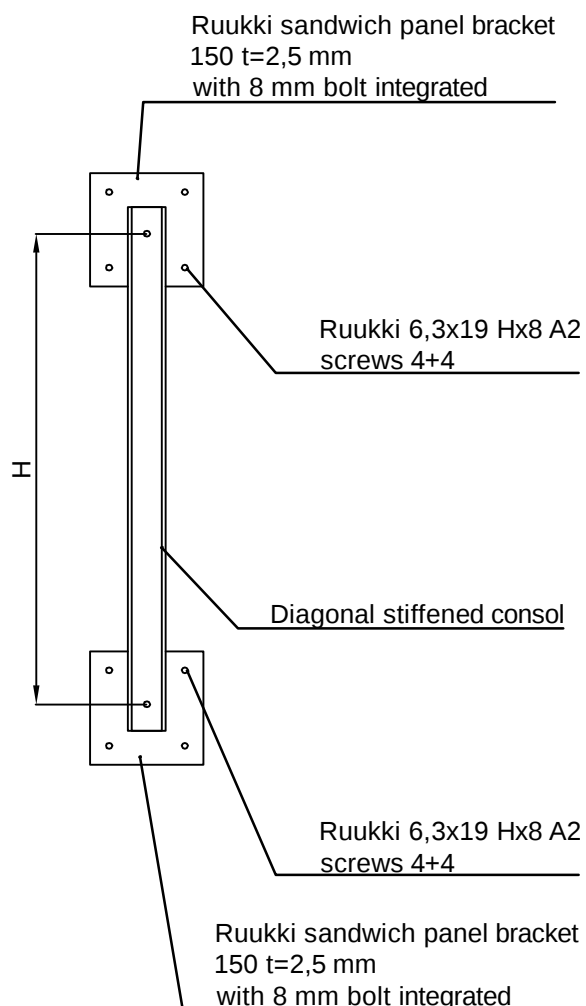
Contents of drawing

Sandwich panel SPA, nSPB, SP2B, and SP2E
Consol detail
Bracket

Date 16.09.2026	Rev. date	Work nr.	Drawing nr. SP60-2A-EN
Drawn by Ruukki	Rev.		
Scale 1:10	Building		File nr.



Diagonal stiffened consol



H [mm] = Distance between the connection points
e [mm] = Distance from the load center to the panel surface
 Q_k [kN] = Characteristic load for one consol, always less than 1,0 kN.
 q_k [kN] = Continuous characteristic load from several consols



Contents of drawing

Sandwich panel SPA, nSPB, SP2B, and SP2E
Consol detail
Bracket

Date 16.09.2026	Rev. date	Work nr.	Drawing nr. SP60-2B-EN
Drawn by Ruukki	Rev.		
Scale 1:1	Building		File nr.

Panel compression design strength values

Panel types	f_{Ccd} [N/mm ²]
SPA E, F, S	0,040
SPA I, EE	0,029
SPA E-LIFE	0,036
nSPB WE, W, WF, WS	0,037
nSPB WEE	0,027
SP2B, SP2E	0,035

Screw connection design values for different panel faces

Screw type: Ruukki 6,3x19 Hx8 A2	0,5 mm		0,6 mm	
	R_{td} [kN]	R_{vd} [kN]	R_{td} [kN]	R_{vd} [kN]
SPA and nSPB panels	0,70	1,14	0,79	1,17
SP2B and SP2E panels	0,35	0,57	0,40	0,59

Resistance of one consol in panel sheet of 0,5 mm

Connection capacity for SPA and nSPB types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,96 * \frac{e}{H+110} + 0,15}$$

Connection capacity for SP2B and SP2E types:

$$Q_k \text{ [kN]} \leq \frac{1}{1,92 * \frac{e}{H+110} + 0,30}$$

Compression capacity:

$$Q_k \text{ [kN]} \leq \frac{12,35 * f_{Cc,d} * (H+75)}{e}$$

Resistance of one consol in panel sheet of 0,6 mm

Connection capacity for SPA and nSPB types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,85 * \frac{e}{H+110} + 0,14}$$

Connection capacity for SP2B and SP2E types:

$$Q_k \text{ [kN]} \leq \frac{1}{1,69 * \frac{e}{H+110} + 0,28}$$

Compression capacity:

$$Q_k \text{ [kN]} \leq \frac{12,35 * f_{Cc,d} * (H+75)}{e}$$

The utilization rate of bending moment against wind pressure must be limited to 85%. Ruukki's dimensioning program TrayPan does the checking automatically.

Panel global capacity check for horizontal installed panels

Maximum moment criteria

Panel types	SPA F, S	SPA E, E-LIFE, I, EE	nSPB W, WF, WS	nSPB WEE, WE	SP2B, SP2E
q_k [kN/m] ≤	250/e	200/e	150/e	100/e	100/e

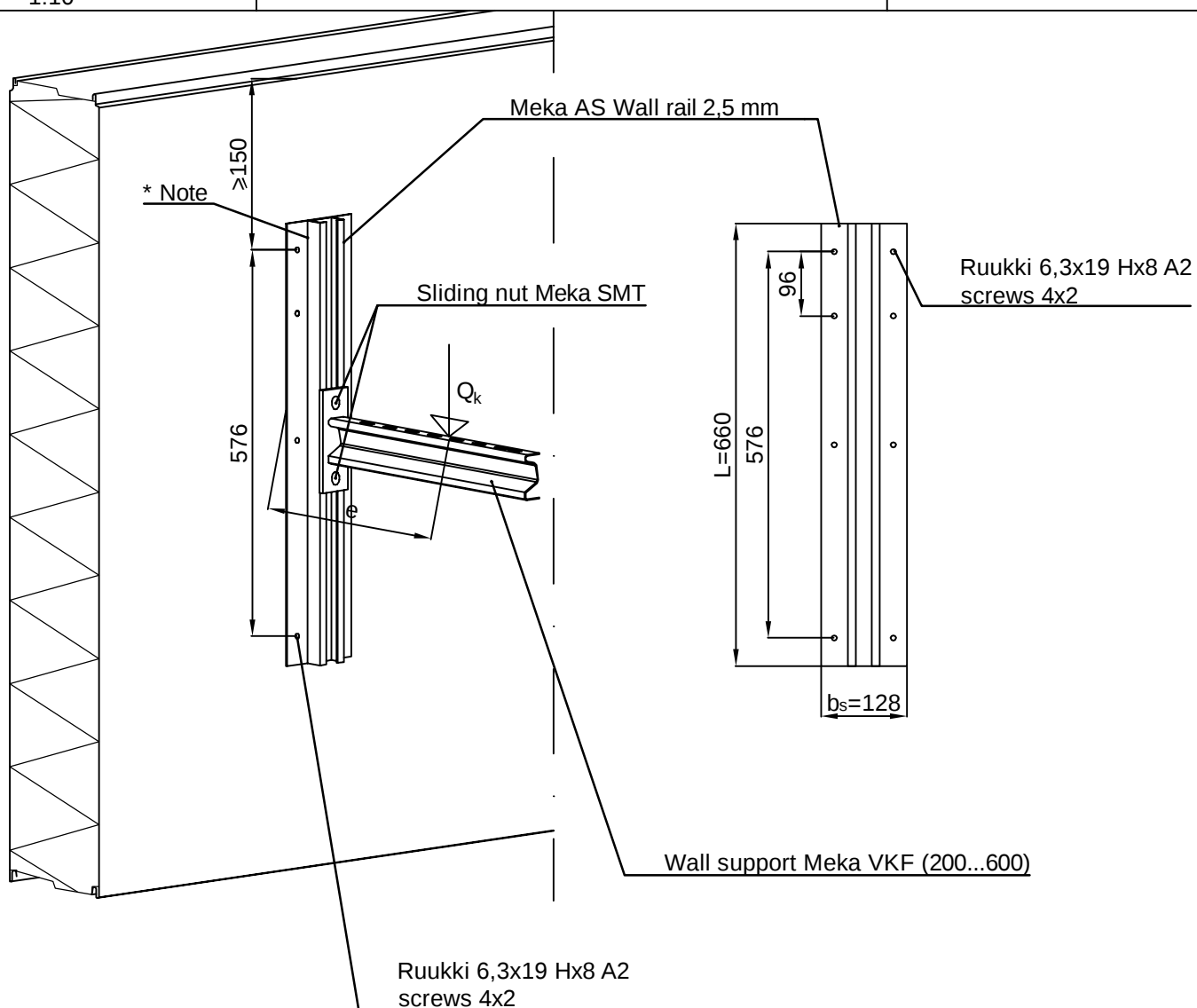
Panel support reaction capacity and panel screw connection capacity together with other loadings to be checked using Traypan program



Contents of drawing

Sandwich panel SPA, nSPB, SP2B, and SP2E
Consol detail
Meka

Date 16.09.2026	Rev. date	Work nr.	Drawing nr. SP60-3A-EN
Drawn by Ruukki	Rev.		
Scale 1:10	Building		File nr.



* Note! 660 mm rail is cut from 1980 mm long rail. Please check that welding point is always at the top of the profile.

See Meka products: www.meka.eu

e [mm] = Distance from the load center to the panel surface

Q_k [kN] = Characteristic load for one consoling, always less than 1,0 kN.

q_k [kN] = Continuous characteristic load from several consoling



Contents of drawing

Sandwich panel SPA, nSPB, SP2B, and SP2E
Consol detail
Meka

Date 16.09.2026	Rev. date	Work nr.	Drawing nr. SP60-3B-EN
Drawn by Ruukki	Rev.		
Scale 1:1	Building		File nr.

Panel compression design strength values

Panel types	f_{Ccd} [N/mm ²]
SPA E, F, S	0,040
SPA I, EE	0,029
SPA E-LIFE	0,036
nSPB WE, W, WF, WS	0,037
nSPB WEE	0,027
SP2B, SP2E	0,035

Screw connection design values for different panel faces

Screw type: Ruukki 6,3x19 Hx8 A2	0,5 mm		0,6 mm	
	R_{td} [kN]	R_{vd} [kN]	R_{td} [kN]	R_{vd} [kN]
SPA and nSPB panels	0,70	1,14	0,79	1,17
SP2B and SP2E panels	0,35	0,57	0,40	0,59

Resistance of one consol in panel sheet of 0,5 mm

Connection capacity for SPA and nSPB types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,15+0,0012 \cdot e}$$

Connection capacity for SP2B and SP2E types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,30+0,0023 \cdot e}$$

Compression capacity:

$$Q_k \text{ [kN]} \leq \frac{9000 \cdot f_{Cc,d}}{e}$$

Resistance of one consol in panel sheet of 0,6 mm

Connection capacity for SPA and nSPB types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,15+0,0010 \cdot e}$$

Connection capacity for SP2B and SP2E types:

$$Q_k \text{ [kN]} \leq \frac{1}{0,30+0,0018 \cdot e}$$

Compression capacity:

$$Q_k \text{ [kN]} \leq \frac{9000 \cdot f_{Cc,d}}{e}$$

The utilization rate of bending moment against wind pressure must be limited to 85%. Ruukki's dimensioning program TrayPan does the checking automatically.

Panel global capacity check for horizontal installed panels

Maximum moment criteria

Panel types	SPA F, S	SPA E, E-LIFE, I, EE	nSPB W, WF, WS	nSPB WEE, WE	SP2B, SP2E
q_k [kN/m] ≤	250/e	200/e	150/e	100/e	100/e

Panel support reaction capacity and panel screw connection capacity together with other loadings to be checked using Traypan program

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