S-MD 03 Z, S-MD 23 Z, S-MD 2310 Y carbon steel self-drilling screw for sheet overlaps

Product data

General information

Material specification:
Carbon steel: case-hardened
S-MD03Z: Zinc coating ≧ 8 µm galvanized
S-MD23Z: Zinc coating ≧ 8 µm galvanized, with pressed-on flange.
S-MD2310Y: Zinc coating ≧ 8 µm galvanized and yellow chromated, case-hardened, with pressed-on flange.

Fastening tools:

Screwdriver:	Hilti ST 1800
Torque settings:	∅ 4.2 = 1– 3
	∅ 4.8 = 3– 5
	∅ 5.5 = 6– 8
	∅ 6.3 = 8–10

Drive without depth gauge.
Cut-out controlled by torque clutch
Nut set driver:

S-MD03Z 4.2x16 + S-MD03Z 4.8xL	S-NSD7 Item no. 308900
S-MD03Z 5.5x25 + S-MD23Z 5.5x22 + S-MD2310Y 6.3x22M	S-NSD8 Item no. 308901
Stand-up tool with screwdriver	Hilti SDT 30, ST 1800
Torque settings:	∅ 4.8 = 3–5
	∅ 5.5 = 6–8

Drive without depth gauge.
Cut-out controlled by torque clutch
Bit holder S-BH 435DT: Item no. 304415
Nut set driver:

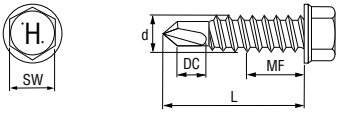
S-MD03Z	S-NS D8 Item no. 304413
S-MD23Z + S-MD2310Y 6.3x22M	S-NSD 10 DT Item no. 284485

Approvals:

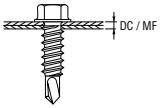
CE

Dimensions

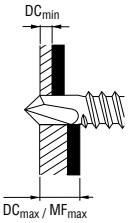
Uses:
Overlap joints in load-bearing (decking) sheets not exposed to the weather.
Fastening liner trays, web joints.



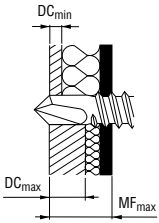
Sheet metal joints



without insulation

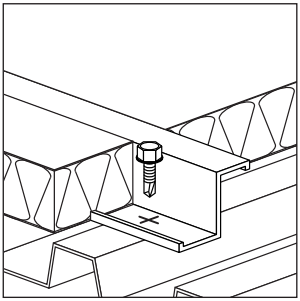
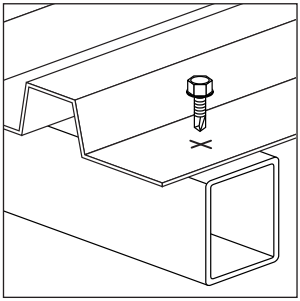
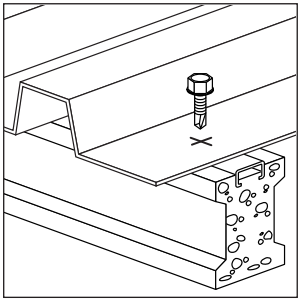
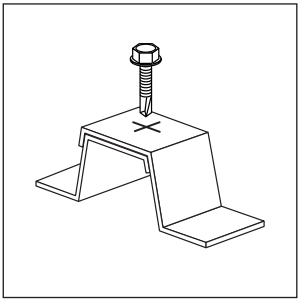
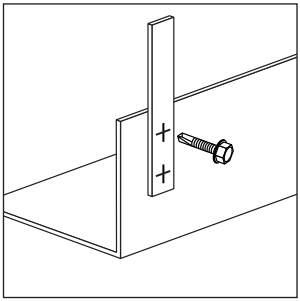
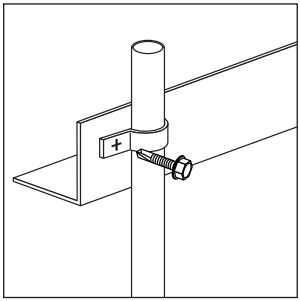


with insulation



Applications

Examples

Load data

Design data

Drilling capacity Σt

max. 3.5 mm

Tightening torque (recommendation)

Screw in end-stop oriented

Total thickness Σt_I:	up to 2.65 mm	up to 6.00 mm
Tightening torque:	2 Nm	4 Nm

	Component II steel with t_{II} [mm] S235J according to DIN EN 10025-2 S280GD or S320GD (DIN EN 10326)		
	1.25	**1.50**	**2.00**
Component I steel with t_I [mm] S280GD or S320GD (DIN EN 10326)	**Shear force $V_{R,k}$** [kN]		
0.63	2.20	2.40	2.40
0.75	2.40	2.70	3.20
0.88	2.60	2.90	3.30
1.00	2.70	3.20	3.70
1.13	2.70	3.20	3.70
1.25	2.70	3.20	3.70
	Tension force $N_{R,k}$ [kN]		
0.63	1.00	1.60	2.00
0.75	1.00	1.60	2.30
0.88	1.00	1.60	2.60
1.00	1.00	1.60	2.60
1.13	1.00	1.60	2.60
1.25	1.00	1.60	2.60

Safety factors according to EN 1993-1-3 and CUAP 06.02/07		
	Tension	**Shear**
Partial safety concept		
Partial safety factor	$\gamma_M = 1.33$	$\gamma_M = 1.33$
Influence of cyclic loading	$\alpha_{cyclic} = 1.0$	– / –
Design load	$N_{Rd} = 1.0 \cdot N_{Rk} / 1.33$	$V_{Rd} = V_{Rk} / 1.33$
Global safety concept		
Global safety factor *	$\gamma_{GLOB} = 2.0$	$\gamma_{GLOB} = 2.0$
Recommended load	$N_{rec} = 1.0 \cdot N_{Rk} / 2.0$	$V_{rec} = V_{Rk} / 2.0$

* Note: The global safety factor of 2.0 includes a partial safety factor of $\gamma_F = 1.5$ for wind load. For other loads safety factors should be applied in accordance with the appropriate standards.

Screw selection

Screw program

Drilling thickness **DC** mm	Fastening thickness **MF** max. mm	Dimensions (dxL) mm	Head size AF	Package contents	Ordering designation	Item no.
2.1-3.50	7	4.2x16	7	1000	S-MD03Z 4.2x16	**219013**

Load data

Design data

Drilling capacity Σt

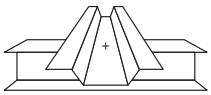
max. 4,5 mm

Tightening torque (recommendation)

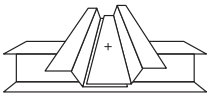
Screw in end-stop oriented

Total thickness Σt_I:	up to 2.15 mm	up to 4.50 mm
Tightening torque:	2 Nm	6 Nm

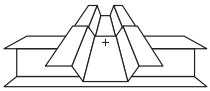
	Component II steel with t_{II} [mm] S235J according to DIN EN 10025-2 S280GD or S320GD (DIN EN 10326)			
	1.50	**2.00**	**2.50**	**3-00**
Component I steel with t_I [mm] S280GD or S320GD (DIN EN 10326)	**Shear force $V_{R,k}$** [kN]			
0.63	2.30	2.70 ac	2.70 ac	2.70 ac
0.75	2.30	3.00	3.00	3.80 ac
0.88	2.60	3.50	3.50	4.90
1.00	2.90	4.00	4.00	6.00
1.13	3.50	4.60	4.60	6.60
1.25	4.10	5.20	5.20	7.10
1.50	5.20	6.00	6.00	7.30
1.75	5.20	6.00	6.00	–
2.00	5,20	6.00	6.00	–
	Tension force $N_{R,k}$ [kN]			
0.63	1.60	1.60	1.60 ac	1.60 ac
0.75	1.60	2.20	2.20	2.20 ac
0.88	1.60	2.40	2.40	3.00
1.00	1.60	2.40	2.40	3.90
1.13	1.60	2.40	2.40	4.10
1.25	1.60	2.40	2.40	4.10
1.50	1.60	2.40	2.40	4.10
1.75	1.60	2.40	2.40	–
2.00	1.60	2.40	2.40	–



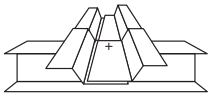
(a)
single



(b)
side lap



(c)
end overlap



(d)
side lap and end overlap

Safety factors according to EN 1993-1-3 and CUAP 06.02/07		
	Tension	**Shear**
Partial safety concept		
Partial safety factor	$\gamma_M = 1.33$	$\gamma_M = 1.33$
Influence of cyclic loading	$\alpha_{cyclic} = 1.0$	– / –
Design load	$N_{Rd} = 1.0 \cdot N_{Rk} / 1.33$	$V_{Rd} = V_{Rk} / 1.33$
Global safety concept		
Global safety factor *	$\gamma_{GLOB} = 2.0$	$\gamma_{GLOB} = 2.0$
Recommended load	$N_{rec} = 1.0 \cdot N_{Rk} / 2.0$	$V_{rec} = V_{Rk} / 2.0$

* Note: The global safety factor of 2.0 includes a partial safety factor of $\gamma_F = 1.5$ for wind load. For other loads safety factors should be applied in accordance with the appropriate standards.

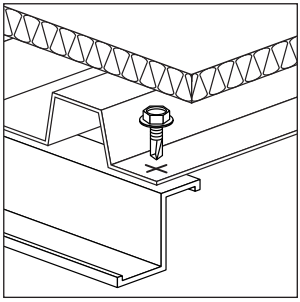
Screw selection

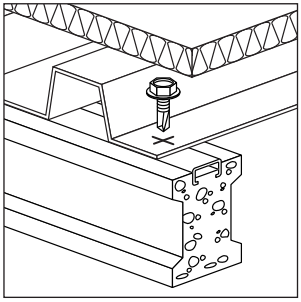
Screw program

Drilling thickness **DC** mm	Fastening thickness **MF** max. mm	Dimensions (dxL) mm	Head size AF	Package contents	Ordering designation	Item no.
2.1-4.50	7	4.8x16	8	500	S-MD03Z 4.8x16	**219015**
2.1-4.50	10	4.8x19	8	500	S-MD03Z 4.8x19	**219016**

Applications

Examples





Load data

Design data

Drilling capacity Σt

max. 6.0 mm

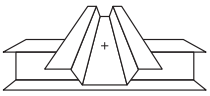
Tightening torque (recommendation)

Screw in end-stop oriented

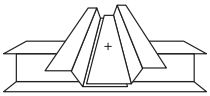
Tightening torque:	7 Nm

	Component II steel with t_{II} [mm] S235J according to DIN EN 10025-2 S280GD, S320GD or S350GD (DIN EN 10326)				
	2.00	**2.50**	**3.00**	**4.00**	**5.00**
Component I steel with t_I [mm] S280GD, S320GD or S350GD (DIN EN 10326)	**Shear force $V_{R,k}$** [kN]				
0.63	2.60 ac	2.60 ac	2.60 ac	2.60 ac	2.60 ac
0.75	3.70 ac	3.70 ac	3.70 ac	3.70 ac	3.70 ac
0.88	4.50	4.50	5.00 ac	5.00 ac	5.00 ac
1.00	4.50	4.50	6.50 ac	6.50 ac	6.50 ac
1.13	4.90	4.90	7.00	7.90 a	–
1.25	5.30	5.30	7.40	9.30	–
1.50	6.20	6.20	8.30	9.50	–
1.75	6.20	6.20	8.30	9.50	–
2.00	7.80	7.80	9.40	9.50	–

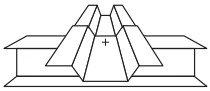
	Tension force $N_{R,k}$ [kN]				
0.63	1.70 ac	1.70 ac	1.70 ac	1.70 ac	1.70 ac
0.75	2.20 ac	2.20 ac	2.20 ac	2.20 ac	2.20 ac
0.88	2.90	2.90	2.90 ac	2.90 ac	2.90 ac
1.00	2.90	3.50	3.50 ac	3.50 a	3.50 a
1.13	2.90	4.30	4.30	4.30	–
1.25	2.90	4.35	5.10	5.10	–
1.50	2.90	4.35	5.61	6.90	–
1.75	2.90	4.35	5.61	6.90	–
2.00	2.90	4.35	5.61	6.90	–



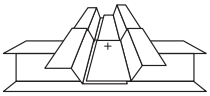
(a) single



(b) side lap



(c) end overlap



(d) side lap and end overlap

Safety factors according to EN 1993-1-3 and CUAP 06.02/07

	Tension	Shear
Partial safety concept		
Partial safety factor	$\gamma_M = 1.33$	$\gamma_M = 1.33$
Influence of cyclic loading	$\alpha_{cyclic} = 1.0$	– / –
Design load	$N_{Rd} = 1.0 \cdot N_{Rk} / 1.33$	$V_{Rd} = V_{Rk} / 1.33$
Global safety concept		
Global safety factor *	$\gamma_{GLOB} = 2.0$	$\gamma_{GLOB} = 2.0$
Recommended load	$N_{rec} = 1.0 \cdot N_{Rk} / 2.0$	$V_{rec} = V_{Rk} / 2.0$

* Note: The global safety factor of 2.0 includes a partial safety factor of $\gamma_F = 1.5$ for wind load. For other loads safety factors should be applied in accordance with the appropriate standards.

Screw selection

Screw program

Drilling thickness **DC** mm	Fastening thickness **MF** max. mm	Dimensions (dxL) mm	Head size AF	Package contents	Ordering designation	Item no.
2.6–6.0	6	5.5x19	8	500	S-MD03Z 5.5x19	**413415**
2.6–6.0	9	5.5x22	8	500	S-MD03Z 5.5x22	**413416**
2.6–6.0	12	5.5x25	8	500	S-MD03Z 5.5x25 *)	**413417**
2.6–6.0	19	5.5x32	8	500	S-MD03Z 5.5x32	**413419**
2.6–6.0	25	5.5x38	8	500	S-MD03Z 5.5x38	**413420**
2.6–6.0	37	5.5x50	8	500	S-MD03Z 5.5x50	**414293**
2.6–6.0	10	5.5x22	8	500	S-MD23Z 5.5x22	**413427**
2.6–6.0	10	5.5x22	8	500	S-MD23Z 5.5x22	**413428**

*) Screw for sheet overlaps with reduced drill point diameter

Load data

Design data

Drilling capacity Σt

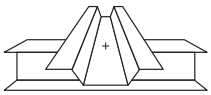
max. 6.0 mm

Tightening torque (recommendation)

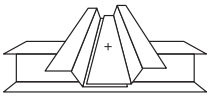
Screw in end-stop oriented

Tightening torque:	7 Nm

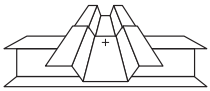
	Component II steel with t_{II} [mm] S235, S272 or S355 according to DIN EN 10025-2 S280GD, S320GD or S350GD (DIN EN 10326)				
	2.00	**2.50**	**3.00**	**4.00**	**5.00**
Component I steel with t_I [mm] S280GD, S320GD or S350GD (DIN EN 10326)	**Shear force $V_{R,k}$** [kN]				
0.63	3.10 ac	3.10 ac	3.10 abcd	3.10 abcd	3.10 abcd
0.75	4.20 ac	4.20 ac	4.20 abcd	4.20 abcd	4.20 abcd
0.88	5.40 ac	5.40 ac	5.40 ac	5.40 abcd	5.40 abcd
1.00	5.60	5.60	6.60 ac	6.60 ac	6.60 ac
1.13	5.70	5.70	7.80	8.00 ac	–
1.25	5.90	5.90	9.00	9.56 ac	–
1.50	7.00	7.00	9.70	10.00	–
1.75	7.00	7.00	9.70	10.00	–
2.00	7.00	7.00	9.70	10.00	–
	Tension force $N_{R,k}$ [kN]				
0.63	1.90 ac	1.90 ac	1.90 abcd	1.90 abcd	1.90 abcd
0.75	2.60 ac	2.60 ac	2.60 abcd	2.60 abcd	2.60 abcd
0.88	3.21 ac	3.40 ac	3.40 ac	3.40 abcd	3.40 abcd
1.00	3.21	4.30	4.30 ac	4.30 ac	4.30 ac
1.13	3.21	4.62	5.30	5.30 ac	–
1.25	3.21	4.62	6.03	6.40 ac	–
1.50	3.21	4.62	6.03	6.90	–
1.75	3.21	4.62	6.03	6.90	–
2.00	3.21	4.62	6.03	7.20	–



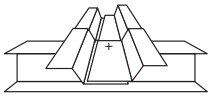
(a)
single



(b)
side lap



(c)
end overlap



(d)
side lap and end overlap

Safety factors according to EN 1993-1-3 and CUAP 06.02/07		
	Tension	**Shear**
Partial safety concept		
Partial safety factor	$\gamma_M = 1.33$	$\gamma_M = 1.33$
Influence of cyclic loading	$\alpha_{cyclic} = 1.0$	– / –
Design load	$N_{Rd} = 1.0 \cdot N_{Rk} / 1.33$	$V_{Rd} = V_{Rk} / 1.33$
Global safety concept		
Global safety factor *	$\gamma_{GLOB} = 2.0$	$\gamma_{GLOB} = 2.0$
Recommended load	$N_{rec} = 1.0 \cdot N_{Rk} / 2.0$	$V_{rec} = V_{Rk} / 2.0$

* Note: The global safety factor of 2.0 includes a partial safety factor of $\gamma_F = 1.5$ for wind load. For other loads safety factors should be applied in accordance with the appropriate standards.

Screw selection

Screw program

Drilling thickness **DC** mm	Fastening thickness **MF** max. mm	Dimensions (dxL) mm	Head size AF	Package contents	Ordering designation	Item no.
2.6-6.00	6	6.3x19	3/8"	500	S-MD03Z 6.3x19	**413421**
2.6-6.00	9	6.3x22	3/8"	500	S-MD03Z 6.3x22	**413422**
2.6-6.00	12	6.3x25	3/8"	500	S-MD03Z 6.3x25	**413423**
2.6-6.00	19	6.3x32	3/8"	500	S-MD03Z 6.3x32	**413424**
2.6-6.00	25	6.3x38	3/8"	500	S-MD03Z 6.3x38	**414295**
2.6-6.00	37	6.3x50	3/8"	250	S-MD03Z 6.3x50	**413425**
2.6-6.00	57	6.3x70	3/8"	250	S-MD03Z 6.3x70	**413426**
2.6-6.00	9	6.3x22	10	200	S-MD23 Z 6.3x22M	**413431**
2.6-6.00	6	6.3x19	10	500	S-MD23Z 6.3x19	**413429**
2.6-6.00	9	6.3x22	10	500	S-MD23Z 6.3x22	**413430**
2.6-6.00	12	6.3x25	10	500	S-MD23Z 6.3x25	**413432**
2.6-6.00	37	6.3x55	10	250	S-MD23Z 6.3x50	**413433**