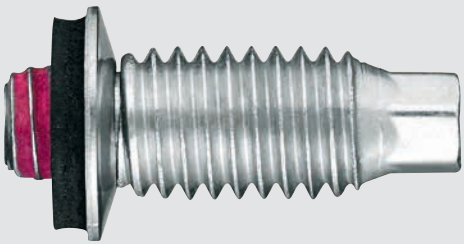
S-BT
DATA SHEET

Screw-in stainless steel and carbon steel threaded stud



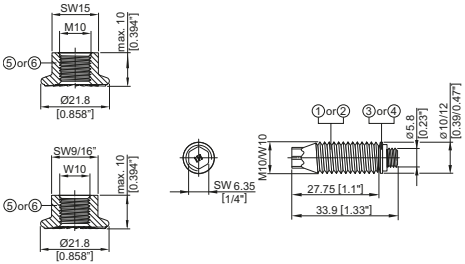
July 2021

S-BT Screw-in stainless steel and carbon steel threaded stud

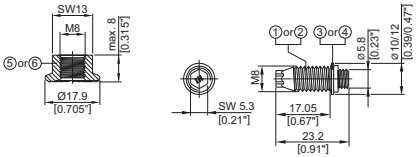
Product data

Dimension

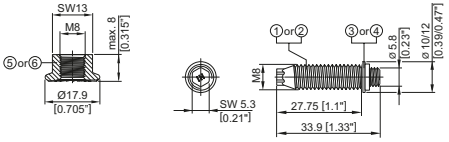
S-BT-MR M10/15 SN6
S-BT-MR MT M10/15 SN6*)
S-BT-MR M10/15 SN6 AL**)
S-BT-MR W10/15 SN6
S-BT-MR W10/15 SN6 AL**)
S-BT-MF M10/15 AN6
S-BT-MF MT M10/15 AN6*)
S-BT-MF W10/15 AN6



S-BT-MR M8/7 SN6
S-BT-MR MT M8/7 SN6*)
S-BT-MR M8/7 SN6 AL**)
S-BT-GR M8/7 SN6*)
S-BT-GR NG M8/7 SN6*)
S-BT-GR M8/7 SN6 AL*) **)
S-BT-MF M8/7 AN6
S-BT-MF MT M8/7 AN6*)
S-BT-GF M8/7 AN6*)
S-BT-GF NG M8/7 SN6*)



S-BT-MR M8/15 SN6
S-BT-MR M8/15 SN6 AL**)
S-BT-MF M8/15 AN6



Material specification

① Threaded shank:	Stainless steel “S 31803 (1.4462)” zinc-coated	(S-BT-_R)
② Threaded shank:	Carbon steel “1038/duplex-coated”	(S-BT-_F)
③ SN 12-R washers:	Ø 12 mm [0.47”] Stainless steel “S 31635 (1.4404)”	(S-BT-_R)
④ AN10-F washers:	Ø 10 mm [0.39”] Aluminum	(S-BT-_F)
⑤ Serrated flange nut*):	Stainless steel grade A4 – 70/80	(S-BT-MR)
⑥ Serrated flange nut*):	Carbon steel HDG, grade 8	(S-BT-MF)
Sealing ring of sealing washers:	Chloroprene rubber CR 3.1107, black resistant to UV, salt water, water, ozone, oils, etc.	

Assessments, Reports and Type Approvals

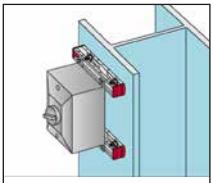
ETA-20/0530
ICC-ES ESR-4185
ABS: 16-HS1550085-PDA
DNV-GL: TAS00000N6
LR: 16/00063
BV: 45116/A BV
Russian Maritime Register of Shipping: 18.40040.250
RINA: FPE278318CS
China Classification Society CCS: NJ17P2016

*) package does not include serrated flange nuts
**) for use in aluminum base material

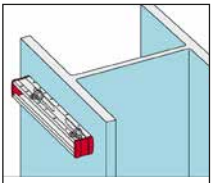
Applications

Examples

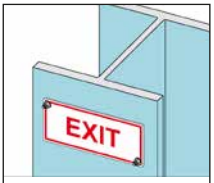
Multipurpose Fastening	Grating with X-FCM X-FCM NG and X-FCS-R *)
S-BT-MR _____ S-BT-MF _____	S-BT-GR _____ S-BT-GF _____



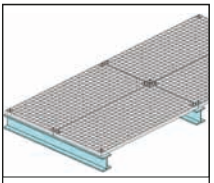
Junction box, etc.



Channel installation



Signage



Grating fastening

*) Load data, application requirements, corrosion information, fastener selection, system recommendation, material specification and coating refer to section X-FCM Grating Fastening System, X-FCM NG Grating Fastening System or X-FCS-R Grating Fastening System in the Hilti Direct Fastening Technology Manual.

Load data

Recommended loads

	S-BT-MR and S-BT-GR made of stainless steel				
Base material thickness [1]	$t_{II} \geq 5$ mm [0.20"]			3 mm [0.12"] $\leq t_{II} < 5$ mm [0.20"]	
Base material type	Steel S235 A36	Steel S355, S420 Grade 50	Aluminum $f_u \geq 270$ MPa	Steel S235 A36	Steel S355, S420 Grade 50
Tension, N_{rec} [kN/lb]	1.9/425	2.3/515	1.9/425	1.8/405	2.1/470
Shear, V_{rec} [kN/lb] For edge distance 6 mm [0.24"] ≤ c < 15 mm [0.59"]	2.5/560	2.8/625	2.9/650	2.4/540	2.5/560
Shear, V_{rec} [kN/lb] For edge distance c ≥ 15 mm [0.59"]	4.0/895	4.0/895	3.5/785	3.8/850	3.8/850
Moment, M_{rec} [Nm/lbft]	11.1/8.0				

	S-BT-MF and S-BT-GF made of duplex coated carbon steel				
Base material thickness [1]	$t_{II} \geq 5$ mm [0.20"]			3 mm [0.12"] $\leq t_{II} < 5$ mm [0.20"]	
Base material type	Steel S235 A36	Steel S355, S420 Grade 50	Aluminum $f_u \geq 270$ MPa	Steel S235 A36	Steel S355, S420 Grade 50
Tension, N_{rec} [kN/lb]	2.0/450	2.4/540	n.a.	1.9/425	2.3/515
Shear, V_{rec} [kN/lb] For edge distance 6 mm [0.24"] ≤ c < 15 mm [0.59"]	2.5/560	2.8/625	n.a.	2.4/540	2.5/560
Shear, V_{rec} [kN/lb] For edge distance c ≥ 15 mm [0.59"]	2.7/605	2.9/650	n.a.	2.7/605	2.9/650
Moment, M_{rec} [Nm/lbft]	6.7/5.0		n.a.	6.7/5.0	

[1] For base material thickness 3 mm [0.12"] ≤ t_{II} < 6 mm [0.24"] rework of the coating on the back side of the plate/profile may be needed.

Design loads

	S-BT-MR and S-BT-GR made of stainless steel				
Base material thickness [1]	$t_{II} \geq 5$ mm [0.20"]			3 mm [0.12"] $\leq t_{II} < 5$ mm [0.20"]	
Base material type	Steel S235 A36	Steel S355, S420 Grade 50	Aluminum $f_u \geq 270$ MPa	Steel S235 A36	Steel S355, S420 Grade 50
Tension, N_{Rd} [kN/lb]	2.7/605	3.2/715	2.7/605	2.5/560	3.0/670
Shear, V_{Rd} [kN/lb] For edge distance 6 mm [0.24"] $\leq c < 15$ mm [0.59"]	3.5/785	3.9/875	4.0/895	3.4/760	3.5/785
Shear, V_{Rd} [kN/lb] For edge distance $c \geq 15$ mm [0.59"]	5.6/1255	5.6/1255	5.0/1120	5.3/1190	5.3/1190
Moment, M_{Rd} [Nm/lbft]	15.6/12.0				

	S-BT-MF and S-BT-GF made of duplex coated carbon steel				
Base material thickness [1]	$t_{II} \geq 5$ mm [0.20"]			3 mm [0.12"] $\leq t_{II} < 5$ mm [0.20"]	
Base material type	Steel S235 A36	Steel S355, S420 Grade 50	Aluminum $f_u \geq 270$ MPa	Steel S235 A36	Steel S355, S420 Grade 50
Tension, N_{Rd} [kN/lb]	2.8/625	3.3/740	n.a.	2.7/605	3.2/715
Shear, V_{Rd} [kN/lb] For edge distance 6 mm [0.24"] $\leq c < 15$ mm [0.59"]	3.5/785	3.9/875	n.a.	3.4/760	3.5/785
Shear, V_{Rd} [kN/lb] For edge distance $c \geq 15$ mm [0.59"]	3.8/850	4.0/895	n.a.	3.8/850	4.0/895
Moment, M_{Rd} [Nm/lbft]	9.4/7.0		n.a.	9.4/7.0	

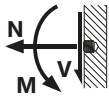
[1] For base material thickness 3 mm [0.12"] $\leq t_{II} < 6$ mm [0.24"] rework of the coating on the back side of the plate/profile may be needed.

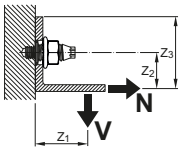
Conditions for recommended loads and design loads:

- Use S-BT-MR and S-BT-MF (multipurpose fastening) only with the supplied Hilti serrated flange nuts M8, M10, W10 (⑤ or ⑥ as per according to General Information – Material specifications)
- Global factor of safety Ω resp. partial factor of safety γ_m (based on 5 % fractile ultimate test value)

	Recommended loads	Design loads
static pull-out	2.80	2.00
static shear	2.80	2.00
Bending	1.75	1.25

- Minimum edge distance = 6 mm [0.24"], minimum spacing ≥ 18 mm [0.709"]
- Effect of base metal vibration and stress (e.g. areas with tensile stress) considered.
- Redundancy (multiple fastening) must be provided.
- If eccentric loading exists (e.g. use of an angle clip), moments caused by off-center loading must be considered.





Cyclic loading

S-BT threaded studs are only to be used for fastenings subject to static or quasi-static loading. Inquire at Hilti for test data if cyclic loading has to be considered in the design.

Recommended interaction formula for combined loading

V–N (shear and tension) $\frac{V}{V_{rec}} + \frac{N}{N_{rec}} \le 1.0$ with $\frac{V}{V_{rec}} \le 1.0$ and $\frac{N}{N_{rec}} \le 1.0$

V–M (shear and bending) $\frac{V}{V_{rec}} + \frac{M}{M_{rec}} \le 1.0$ with $\frac{V}{V_{rec}} \le 1.0$ and $\frac{M}{M_{rec}} \le 1.0$

N–M (tension and bending) $\frac{N}{N_{rec}} + \frac{M}{M_{rec}} \le 1.0$

V–N–M (shear, tension and bending) $\frac{V}{V_{rec}} + \frac{N}{N_{rec}} + \frac{M}{M_{rec}} \le 1.0$

Application Requirements

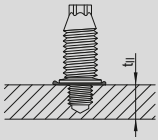
Base material thickness t_{II} and type of bore hole

S-BT-MR M8/7 SN 6
S-BT-MR MT M8/7 SN 6
S-BT-MR M8/7 SN 6 AL*)
S-BT-MF M8/7 AN 6
S-BT-MF MT M8/7 AN 6
S-BT-GR M8/7 SN 6
S-BT-GR NG M8/7 SN 6*)
S-BT-GR M8/7 SN 6 AL*)
S-BT-GF M8/7 AN 6
S-BT-GF NG M8/7 AN 6*)

S-BT-MR M8/15 SN6
S-BT-MR M8/15 SN6AL*)
S-BT-MF M8/15 AN6

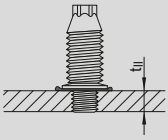
S-BT-MR M10/15 SN6
S-BT-MR M10/15 SN6AL*)
S-BT-MF M10/15 AN6
S-BT-MR W10/15 SN6
S-BT-MR W10/15 SN6AL*)
S-BT-MF W10/15 AN6

Pilot hole



Base material thickness
steel and aluminum: $t_{II} \ge 6$ mm [0.24"]

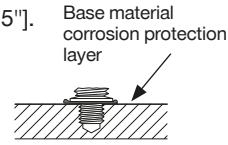
Drill through hole



Base material thickness
steel: 3 mm [0.12"] $\le t_{II} < 6$ mm [0.24"]
aluminum: 5 mm [0.20"] $\le t_{II} < 6$ mm [0.24"]

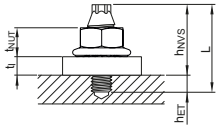
*) for use in aluminum base material

Thickness of base material corrosion protection layer ≤ 0.8 mm [0.0315"].
For thicker coatings, please contact Hilti.



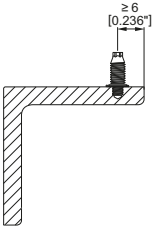
Thickness of fastened material tl

S-BT-_____/7_____ 1.6 mm [0.063"] ≤ t_l ≤ 7.0 mm [0.28"]
S-BT-_____/15_____ 1.6 mm [0.063"] ≤ t_l ≤ 15.0 mm [0.59"]

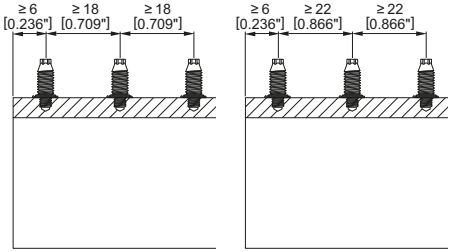


Spacing & edge distances

Edge distance: ≥ 6 mm [0.24"]



Spacing: ≥ 18 mm [0.709"] for all S-BT M8
≥ 22 mm [0.866"] for all S-BT M10
and S-BT W10



Corrosion information

The S-BT stainless steel fasteners are made from the duplex stainless steel type 1.4462, which is equivalent to AISI 316 (A4) steel grade. This grade of stainless steel is classified in the corrosion resistance class IV according to DIN EN 1993-1-4:2015, which makes the material suitable for aggressive environments like in coastal and offshore applications.

The microstructures of duplex stainless steels consist of a mixture of austenite and ferrite phases. Compared to the austenitic stainless steel grades, duplex stainless steels are magnetic. The surface of the S-BT stainless steel fasteners is zinc-coated (anti-friction coating) in order to reduce the thread forming torque when the stud is screwed in into the base material.

The coating of the carbon steel S-BT fasteners consists of an electroplated Zn-alloy for cathodic protection and a top coat for chemical resistance (Duplex-coating). The thickness of the coating is 35 µm. The use of this coating is limited to the corrosion category C1, C2 and C3 according the standard EN ISO 9223. For higher corrosion categories stainless steel fasteners should be used.

In case of a drill through hole or a pilot hole in thin base material, rework of the coating on the back side of the plate/profile may be needed.

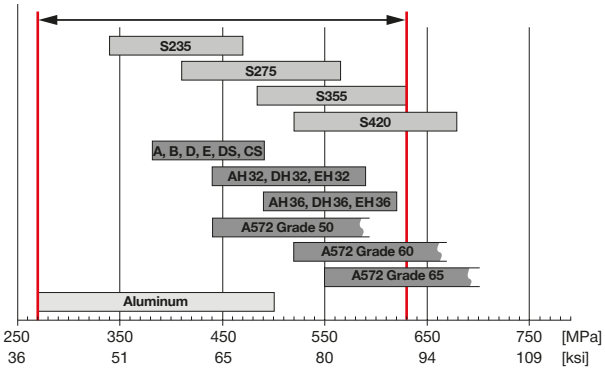
Note: ETA-20/0530 allows the use of carbon steel threaded studs with duplex coating only in dry indoor environment (C1 acc. to EN ISO 9223).

	S-BT-MF, S-BT-GF		S-BT-MR, S-BT-GR	
Corrosivity category C	C3 medium corrosive		C5 very high corrosive	
Drill hole type and base material thickness t_{II} [1]	Topside protection	Backside protection	Topside protection	Backside protection
Drill through hole 3 mm [0.12"] ≤ t_{II} < 6 mm [0.24"]	✓	x[2]	✓	x[2]
Pilot hole 6 mm [0.24"] ≤ t_{II} < 7 mm [0.28"]	✓	✓	✓	✓[3]
Pilot hole t_{II} ≥ 7 mm [0.28"]	✓	✓	✓	✓

[1] Real base material thickness, not nominal material thickness or material thickness with coating.
[2] Damage of the coating on the back side of the plate/profile require a rework of the coating.
[3] Damage of the coating on the back side of the plate/profile require a rework of the coating, if the drilling tools SF BT22-A or SF BT18-A were used for drilling the bore hole. If the drilling tool SBT4-A22 was used for drilling the bore hole, no damage of the coating on the back side of the plate/profile will occur.

Application limit

The base material is limited to steel grade with a maximum tensile strength f_u = 630 MPa [91 ksi].
The minimum tensile strength of steel is f_u ≥ 340 MPa [49 ksi].
The minimum tensile strength of aluminum is f_u ≥ 270 MPa [39 ksi].
Minimum thickness of base material t_{II}: refer to section “Application Requirements”
Maximum thickness of base material t_{II}: no limits



Base material tensile strength f_u

Fastener selection and system recommendation

	Fastener	Drilling tool	Drill bit	Setting tool	Depth gauge
Stainless steel	S-BT-MR M8/7 SN6	SBT 4-A22 or SF BT 18-A or SF BT 22-A	TS-BT 5.5-74 S	SBT 4-A22 or SF 4-A22 or SFC 18-A or SFC 22-A	S-DG BT M8/7 Short 6
	S-BT-MR MT8/7 SN6				
	S-BT-MR M8/7 SN6AL		TS-BT 5.5-74 AL		
	S-BT-MR M8/15 SN6		TS-BT 5.5-74 S		S-DG BT M8/15 Long 6
	S-BT-MR M8/15 SN6AL		TS-BT 5.5-74 AL		
	S-BT-GR M8/7 SN6		TS-BT 5.5-74 S		S-DG BT M8/7 Short 6
	S-BT-GR M8/7 SN6AL		TS-BT 5.5-74 AL		
	S-BT-GR NG M8/7 SN6		TS-BT 5.5-110 S		
	S-BT-MR M10/15 SN6		TS-BT 5.5-74 S		S-DG BT M10-W10/15 Long 6
	S-BT-MR MT M10/15 SN6				
	S-BT-MR M10/15 SN6AL		TS-BT 5.5-74 AL		
	S-BT-MR W10/15 SN6		TS-BT 5.5-74 S		
	S-BT-MR W10/15 SN6AL		TS-BT 5.5-74 AL		
Carbon steel	S-BT-GF NG M8/7 AN6		TS-BT 5.5-110 S		S-DG BT M8/7 Short 6
	S-BT-GF M8/7 AN6		TS-BT 5.5-74 S		
	S-BT-MF M8/7 AN6				
	S-BT-MF MT M8/7 AN6				
	S-BT-MF M8/15 AN6				S-DG BT M8/15 Long 6
	S-BT-MF M10/15 AN6				S-DG BT M10-W10/15 Long 6
	S-BT-MF MT M10/15 AN6				
	S-BT-MF W10/15 AN6				

Fastener quality assurance

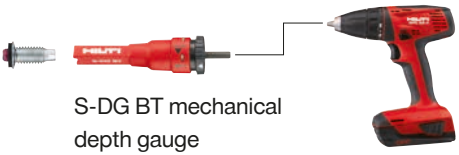
In order to ensure the exact screw-in depth and a proper compressed sealing washer, the S-BT studs have to be installed with the appropriate depth gauge. With this tool the screw-in depth can be adjusted in a range of 0 – 1.5 mm (3 steps, 0.5mm per step).

The S-CC BT calibration card is needed to check the initial stand-off of the S-BT stud and to adjust/calibrate the S-DG BT depth gauge. After finding the right adjustment level for the S-DG BT depth gauge, the gauge can be adjusted and the studs can be installed without additional check of the S-DG BT depth gauge.

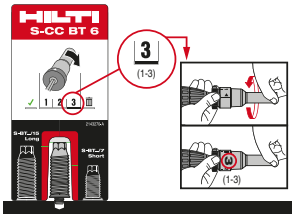
The depth gauge has to be re-adjusted (calibrated) at following times:

- Start of the installation process
- Change of the working position (upwards, downwards, horizontal) and base material (thickness, strength, type)
- Installer change
- After each packaging respectively after the installation of 100 S-BT studs

The lifetime of the S-DG BT depth gauge is ≥ 1000 settings.



S-DG BT mechanical depth gauge



Design and functionality of the mechanical calibration card S-CC BT

Fastening inspection

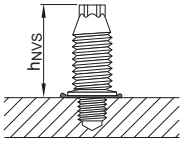
The installer is responsible for the correct setting of the S-BT studs. For the periodical verification of the correct stud stand-off the S-CG BT check gauge can be used.

Design and functionality of the check gauge S-CG BT

Verify stud stand-off h_{NVS} with check gauge S-CG BT

S-BT-____/7____6 h_{NVS} = 18.6 mm to 19.1 mm [0.732" to 0.752"]

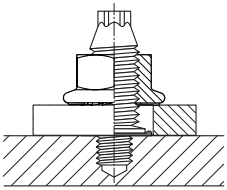
S-BT-____/15____6 h_{NVS} = 29.3 mm to 29.8 mm [1.153" to 1.173"]



Designation	Product name	Comment
S-DG BT M8/7 Short 6	Depth gauge	for exact setting of S-BT M8/7
S-DG BT M8/15 Long 6	Depth gauge	for exact setting of S-BT M8/15
S-DG BT M10-W10/15 Long 6	Depth gauge	for exact setting of S-BT M10/W10
S-CC BT 6	Calibration card	for calibration of the depth gauge (short/long studs)
S-CG BT/7 Short 6	Check gauge	for verification of the stand-off for short studs (7 mm)
S-CG BT/15 Long 6	Check gauge	for verification of the stand-off for long studs (15 mm)

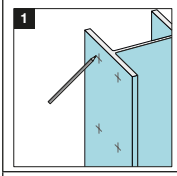
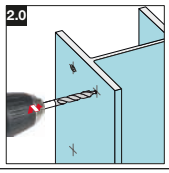
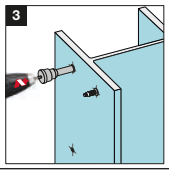
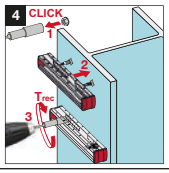
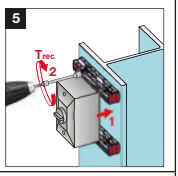
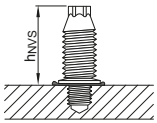
Installation recommendation

S-BT fasteners made of stainless steel with washer-Ø 12 mm (S-BT-_R)
Fastened material hole Ø ≥ 13 mm [0.51"]



S-BT fasteners made of carbon steel with washer-Ø 10 mm (S-BT-_F)
Fastened material hole Ø ≥ 11 mm [0.43"]

Important:
For group fastenings subjected to shear loading the fastened material hole diameter should not exceed 14 mm [0.55"] (S-BT-_R) and 12 mm [0.47"] (S-BT-_F) respectively.

1 Mark location for each fastening	2 Pre-drill with TS-BT stepped drill bit	3 Screw-in S-BT studs into drilled hole	4 Fasten channel on base material	5 Fasten accessory on channel
				
	Usage of SBT 4-A22, SF BT 18-A or SF BT 22-A. Pre-drill until the shoulder grinds a shiny ring to assure proper drilling depth.  Before fastener installation: The drilled hole and the area around the drilled hole must be clear of liquids and debris.	Usage of SBT 4-A22, SFC 18-A or SFC 22-A in combination with the calibrated depth gauge S-DG BT. Verify stud stand-off h_{nvs} with check gauge S-CG BT  Sealing washer must be properly compressed!	Position channel on S-BT studs and hold in place. Tighten the nuts with the suited tightening torque T_{rec}.	Tighten the bolts with the suited tightening torque T_{rec} (see IFU of the Hilti wing nuts).

Important: These are abbreviated instructions which may vary by application. ALWAYS review/follow the instructions for use (IFU) accompanying the product. In case of a drill through hole, rework of the coating on the back side of the plate/profile may be needed.

Tightening torque for fastening to steel base material $t_{II} \geq 6$ mm

	Fastener: S-BT-MF, S-BT-MR
Element: nut	8 Nm

Tightening tool recommendation for tightening with cordless screwdriver

Cordless screwdriver	Clutch type (stop detection)	Gear	Clutch
SF 4-A22	TRC	1	8
SF 6-A22	ESC (HJ)	1	3
SF 6H-A22	ESC (HJ)	1	3
SBT 4-A22	TRC	1	7
SFC 18-A	TRC	1	5
SFC 22-A	TRC	1	5

- Tool power level adjustment: Gear:  Clutch: 
  - The setting of the torque via the Hilti screwdriver with torque release coupling (TRC) can change as the clutch wears over time. The specified torque setting is only a rough guide value and applies to a new Hilti screwdriver. To ensure recommended torque is applied, Hilti recommends the use of a calibrated torque wrench or the Hilti torque tool.
  - The specified torque setting for the Hilti screw drivers with electronic slip clutch (ESC) is only a rough guide value as the ESC has 2 stop detections; Soft Joint (SJ) detection and Hard Joint (HJ) detection. The hard joint detection is activated due to drop in speed (fast stop) and can lead to a torque spike. The installation torque may vary depending on the user and the application. To ensure recommended torque is applied, Hilti recommends the use of a calibrated torque wrench or the Hilti torque tool.

Tightening tool recommendation for tightening with Hilti torque tool

Hilti torque tool
Torque tool X-BT 1/4" – 8 Nm

Tightening torque for fastening to aluminum base material and in steel base material 3 mm ≤ t_{II} < 5 mm (drill through hole)

	Fastener: S-BT-MF, S-BT-MR, S-BT-MR AL
Element: nut	5 Nm

Tightening tool recommendation for tightening with cordless screwdriver

Cordless screwdriver	Clutch type (stop detection)	Gear	Clutch
SF 2-A12	TRC	1	15
SF 2H-A12	TRC	1	15
SF 4-A22	TRC	1	4
SF 6-A22	ESC (HJ)	1	2
SF 6H-A22	ESC (HJ)	1	2
SBT 4-A22	TRC	1	5
SFC 18-A	TRC	1	4
SFC 22-A	TRC	1	4

- Tool power level adjustment: Gear:  Clutch: 
- The setting of the torque via the Hilti screwdriver with torque release coupling (TRC) can change as the clutch wears over time. The specified torque setting is only a rough guide value and applies to a new Hilti screwdriver. To ensure recommended torque is applied, Hilti recommends the use of a calibrated torque wrench or the Hilti torque tool.
- The specified torque setting for the Hilti screw drivers with electronic slip clutch (ESC) is only a rough guide value as the ESC has 2 stop detections; Soft Joint (SJ) detection and Hard Joint (HJ) detection. The hard joint detection is activated due to drop in speed (fast stop) and can lead to a torque spike. The installation torque may vary depending on the user and the application. To ensure recommended torque is applied, Hilti recommends the use of a calibrated torque wrench or the Hilti torque tool.

Tightening tool recommendation for tightening with Hilti torque tool

Hilti torque tool
Torque tool S-BT 1/4" – 5 Nm

	S-BT-MR, S-BT-MF, S-BT-GR, S-BT-GF				
Base material thickness	$t_{II} \geq 5$ mm [0.20"]			3 mm [0.12"] $\leq t_{II} < 5$ mm [0.20"]	
Base material type	Steel S235 A36	Steel S355 Grade 50	Aluminum $f_u \geq 270$ MPa	Steel S235 A36	Steel S355 Grade 50
Tightening torque serrated flange nut T_{rec} [Nm/lbft]	8/5.9	8/5.9	5/3.6	5/3.6	5/3.6

Important: The tightening torque (T_{rec}) for the serrated flange nut is dependent on the stud type, the base material type and thickness, and the drill hole type. Exceeding the tightening torque (T_{rec}) leads to damage of the S-BT stud's anchorage with negative impact on the load values and the sealing function.

System program

Designation	Item no.	Product name	Comment	Application
S-BT-GF M8/7 AN6	2140527	Threaded stud	use with X-FCM grating disc	Grating
S-BT-GF NG M8/7 AN6	2302143	Threaded stud	use with X-FCM-M NG grating disc	Grating
S-BT-MF M8/7 AN6	2139174	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MF MT M8/7 AN6	2298450	Threaded stud	package does not include serrated flange nut	Multipurpose
S-BT-MF M8/15 AN6	2148618	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MF M10/15 AN6	2140528	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MF MT M10/15 AN6	2309240	Threaded stud	package does not include serrated flange nut	Multipurpose
S-BT-MF W10/15 AN6	2139173	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-GR M8/7 SN6	2140529	Threaded stud	use with X-FCM grating disc	Grating
S-BT-GR M8/7 SN6AL	2140742	Threaded stud	use with X-FCM grating disc	Grating
S-BT-GR NG M8/7 SN6	2302142	Threaded stud	use with X-FCM-R NG grating disc	Grating
S-BT-MR M8/7 SN6	2139172	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MR MT M8/7 SN6	2298451	Threaded stud	package does not include serrated flange nut	Multipurpose
S-BT-MR M8/7 SN6AL	2140743	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MR M8/15 SN6	2148612	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MR M8/15 SN6AL	2148614	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MR M10/15 SN6	2140740	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MR MT M10/15 SN6	2205156	Threaded stud	package does not include serrated flange nut	Multipurpose
S-BT-MR M10/15 SN6AL	2140744	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MR W10/15 SN6	2140741	Threaded stud	package includes serrated flange nut	Multipurpose
S-BT-MR W10/15 SN6AL	2140745	Threaded stud	package includes serrated flange nut	Multipurpose

Designation	Item no.	Product name	Comment	Application
TS-BT 5.5-74 S	2143137	Stepped drill bit	for base material steel	
TS-BT 5.5-110 S	2201685	Stepped drill bit	For use in combination with the S-CS NG centering Spacer	Grating
TS-BT 5.5-74 AL	2143138	Stepped drill bit	for base material aluminum	
S-CS NG	2310191	Centering Spacer	For perpendicular pilot hole drilling and precise location of studs	Grating
S-DG BT M8/7 Short 6	2279735	Depth gauge	for exact setting of the S-BT	
S-DG BT M10-W10/15 Long 6	2143261	Depth gauge	for exact setting of the S-BT	
S-DG BT M8/15 Long 6	2148575	Depth gauge	for exact setting of the S-BT	
S-CG BT/7 Short 6	2143262	Check gauge	for verification of the stud stand-off	
S-CG BT/15 long 6	2143263	Check gauge	for verification of the stud stand-off	
S-CC BT 6	2143270	Calibration card	for calibration of the depth gauge	
S-BT $^{1}/_{4}$" – 5 Nm	2143271	Torque tool	manual torque tool (5 Nm)	
X-BT $^{1}/_{4}$" – 8 Nm	2119272	Torque tool	manual torque tool (8 Nm)	
S-NS 13 C 95/3 $^{3}/_{4}$"	2149244	Nut setter	for serrated flange nut M8	
S-NS 15 C 95/3 $^{3}/_{4}$"	2149245	Nut setter	for serrated flange nut M10	
S-NS $^{9}/_{16}$" C 95/3 $^{3}/_{4}$"	2149246	Nut setter	for serrated flange nut W10	