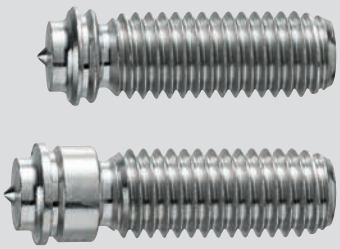
F-BT
DATA SHEET

Stainless steel threaded studs for electrical connections

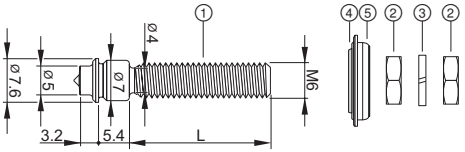
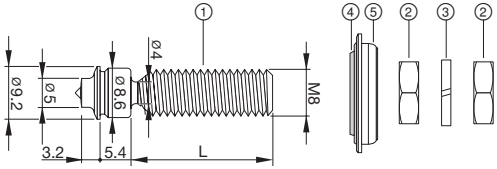
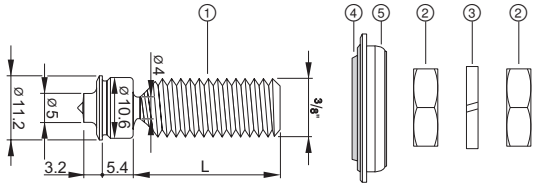
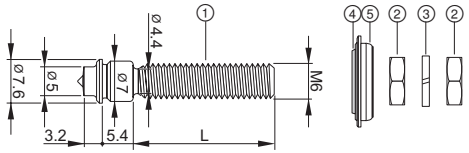
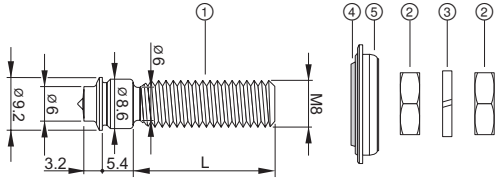


Oktober 2024

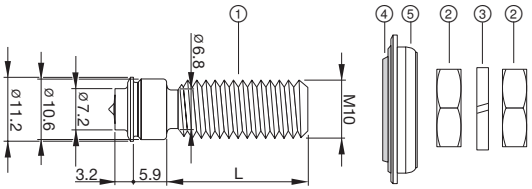
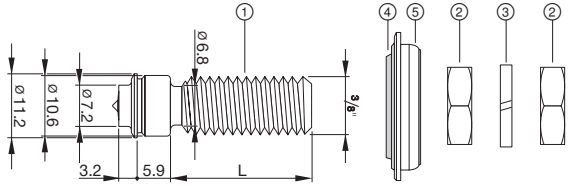
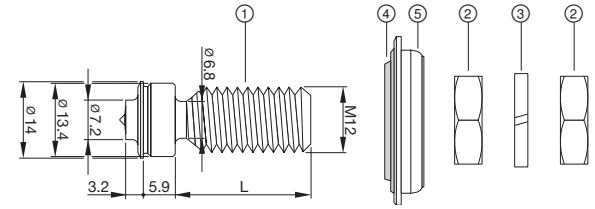
F-BT Stainless steel threaded studs for electrical connection

Product data

Dimensions and material specifications

Technical drawing	Designation
	F-BT-MR M6x25 SN (4)
	F-BT-MR M8x25 SN (4)
	F-BT-MR 3/8x1 SN (5/32)
	F-BT-MR M6x25 SN (6)
	F-BT-MR M8x25 SN (8)

① Stud Stainless steel EN 10088-3, 1.4571 (A5) ASTM A240/A276, 316Ti
② Nut Stainless steel, grade A4-70 EN 10088-2, 1.4404 (A4) ASTM A240, 316L (shall be supplied by customer)
③ Lock washer Stainless steel EN 10088-2, 1.4404 (A4) ASTM A240, 316L (shall be supplied by customer)
④ Sealing washer sealant Sealing elastomer Chloroprene rubber (CR)
⑤ Sealing washer cap Stainless steel EN 10088-2, 1.4404 (A4) ASTM A240, 316L

Technical drawing	Designation
	F-BT-MR M10x25 SN (10) F-BT-MR M10x50 SN (10)
	F-BT-MR 3/8x1 SN (3/8) F-BT-MR 3/8x1-1/2 SN (3/8) F-BT-MR 3/8x2 SN (3/8) F-BT-MR 3/8x4 SN (3/8)
	F-BT-MR M12x50 SN (10)

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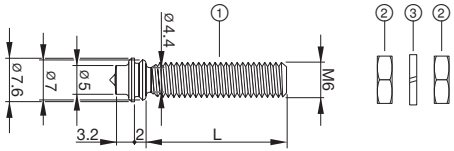
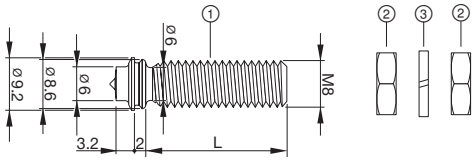
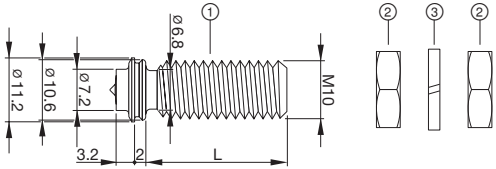
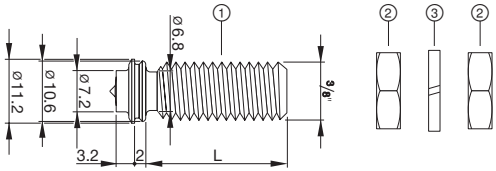
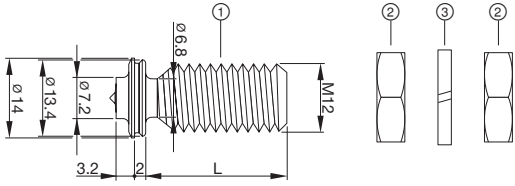
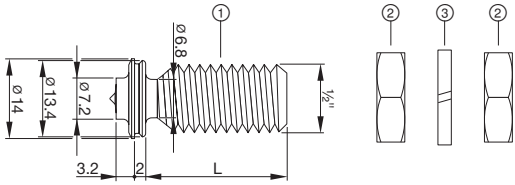
Technical drawing	Designation
	F-BT-MR M6x25 (6)
	F-BT-MR M8x25 (8)
	F-BT-MR M10x25 (10) F-BT-MR M10x50 (10)
	F-BT-MR 3/8x1 (3/8) F-BT-MR 3/8x1-1/2 (3/8) F-BT-MR 3/8x2 (3/8) F-BT-MR 3/8x4 (3/8)
	F-BT-MR M12x50 (10)
	F-BT-MR 1/2x1-1/2 (3/8) F-BT-MR 1/2x2 (3/8)

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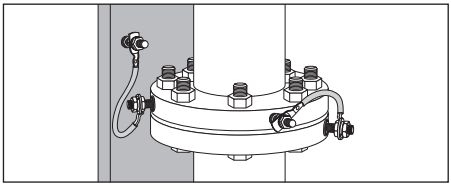
③ Lock washer Stainless steel EN 10088-2, 1.4404 (A4) ASTM A240, 316L (shall be supplied by customer)

Application conditions

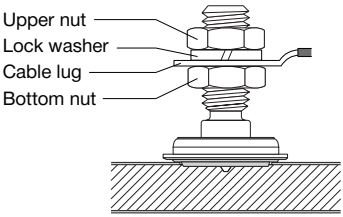
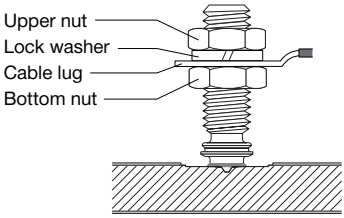
Example



Functional and protective bonding of pipes:
- Flat steel
- Curved steel with R ≥ 600 mm for mounting with sealing washer
- Curved steel with R ≥ 150 mm for mounting without sealing washer

Fastening system

Connection type

Connection type	Fastening condition	Current flow through	Stud type	Fastening description
Single point connection	Fastening to steel	Threaded stud	F-BT-MR SN with sealing washer	
			F-BT-MR	

Performance data

Functional bonding and terminal connection in a circuit

For permanent current (leakage current) due to static charge built up in pipes or when closing an electrical circuit.

Connection type	Fastener	Maximum permanent current I_{th} [A] acc. to IEC	Recommended cable cross section acc. to IEC
Single point connection	F-BT-MR M6x25 SN (4) F-BT-MR M8x25 SN (4) F-BT-MR 3/8x1 SN (5/32) F-BT-MR M6x25 SN (6) F-BT-MR M6x25 (6)	120	10 mm^2
	F-BT-MR M8x25 SN (8) F-BT-MR M8x25 (8)	150	16 mm^2
	F-BT-MR M10x25 SN (10) F-BT-MR M10x50 SN (10) F-BT-MR M12x50 SN (10) F-BT-MR 3/8x1 SN (3/8) F-BT-MR 3/8x1 1/2 SN (3/8) F-BT-MR 3/8x2 SN (3/8) F-BT-MR 3/8x4 SN (3/8) F-BT-MR M10x25 (10) F-BT-MR M10x50 (10) F-BT-MR M12x50 (10) F-BT-MR 3/8x1 (3/8) F-BT-MR 3/8x1 1/2 (3/8) F-BT-MR 3/8”x2 (3/8) F-BT-MR 3/8x4 (3/8) F-BT-MR 1/2x1 1/2 (3/8) F-BT-MR 1/2x2 (3/8)	200	20 mm^2

- Recommended maximal cross section of connected cable according to IEC 60947-7-1 and IEC 60947-7-2:
- Fastening of thicker cable is acceptable, if the maximum allowable permanent current I_{th} is not exceeded and the provisions on cable lug thickness t_{cl} are observed.
- Recommendation is made assuming a maximum ambient temperature of 40° C with an allowable temperature rise of 20° K.

Protective bonding circuit

For discharging short circuit current while protecting electrical equipment or earth/ground cable trays and ladders.

Connection type	Fastener	Maximum short circuit I_{cw} [kA] acc. to IEC	Recommended cable cross section acc. to IEC
Single point connection	F-BT-MR M6x25 SN (4) F-BT-MR M8x25 SN (4) F-BT-MR 3/8x1 SN (5/32) F-BT-MR M6x25 SN (6) F-BT-MR M6x25 (6)	1.2	10 mm^2
	F-BT-MR M8x25 SN (8) F-BT-MR M8x25 (8)	1.92	16 mm^2
	F-BT-MR M10x25 SN (10) F-BT-MR M10x50 SN (10) F-BT-MR M12x50 SN (10) F-BT-MR 3/8x1 SN (3/8) F-BT-MR 3/8x1 1/2 SN (3/8) F-BT-MR 3/8x2 SN (3/8) F-BT-MR 3/8x4 SN (3/8) F-BT-MR M10x25 (10) F-BT-MR M10x50 (10) F-BT-MR M12x50 (10) F-BT-MR 3/8x1 (3/8) F-BT-MR 3/8x1 1/2 (3/8) F-BT-MR 3/8”x2 (3/8) F-BT-MR 3/8x4 (3/8) F-BT-MR 1/2x1 1/2 (3/8) F-BT-MR 1/2x2 (3/8)	2.4	20 mm^2

- Recommended maximal cross section of connected cable according to IEC 60947-7-1 and IEC 60947-7-2.
- Fastening of thicker cable is acceptable, if the maximum short circuit current I_{cw} is not exceeded and the provisions on cable lug thickness t_{cl} are observed.
- Recommendation is made assuming a maximum ambient temperature of 40° C with an allowable temperature rise of 20° K.

Protective bonding circuit

For discharging short circuit current while protecting electrical equipment or earth/ground cable trays and ladders.

Connection type	Fastener	Maximum short circuit I_{cw} [kA] acc. to IEC	Recommended cable cross section acc. to IEC
Double point connection	F-BT-MR M6x25 SN (4) F-BT-MR M8x25 SN (4) F-BT-MR 3/8x1 SN (5/32) F-BT-MR M6x25 SN (6) F-BT-MR M6x25 (6)	1.92	16 mm^2
	F-BT-MR M8x25 SN (8) F-BT-MR M8x25 (8)	3.0	25 mm^2
	F-BT-MR M10x25 SN (10) F-BT-MR M10x50 SN (10) F-BT-MR M12x50 SN (10) F-BT-MR 3/8x1 SN (3/8) F-BT-MR 3/8x1 1/2 SN (3/8) F-BT-MR 3/8x2 SN (3/8) F-BT-MR 3/8x4 SN (3/8) F-BT-MR M10x25 (10) F-BT-MR M10x50 (10) F-BT-MR M12x50 (10) F-BT-MR 3/8x1 (3/8) F-BT-MR 3/8x1 1/2 (3/8) F-BT-MR 3/8”x2 (3/8) F-BT-MR 3/8x4 (3/8) F-BT-MR 1/2x1 1/2 (3/8) F-BT-MR 1/2x2 (3/8)	3.8	32 mm^2

- Recommended maximal cross section of connected cable according to IEC 60947-7-1 and IEC 60947-7-2.
- Fastening of thicker cable is acceptable, if the maximum short circuit current I_{cw} is not exceeded and the provisions on cable lug thickness t_{cl} are observed.

Lightning protection

For high temporary current due to lightning.

Connection type	Fastener	Classicfication acc. to IEC	Maximum lightning current limp [kA] acc. to IEC
Single point connection	F-BT-MR M6x25 SN (4) F-BT-MR M8x25 SN (4) F-BT-MR 3/8x1 SN (5/32) F-BT-MR M6x25 SN (6) F-BT-MR M6x25 (6)	Class N for normal duty	50 for ≤ 5 ms
	F-BT-MR M8x25 SN (8) F-BT-MR M8x25 (8)	Class N for normal duty. Class H for heavy duty	100 for ≤ 5 ms
	F-BT-MR M10x25 SN (10) F-BT-MR M10x50 SN (10) F-BT-MR M12x25 SN (10) F-BT-MR M12x50 SN (10) F-BT-MR 3/8x1 SN (3/8) F-BT-MR 3/8x1 1/2 SN (3/8) F-BT-MR 3/8x2 SN (3/8) F-BT-MR 3/8x4 SN (3/8) F-BT-MR M10x25 (10) F-BT-MR M10x50 (10) F-BT-MR M12x25 (10) F-BT-MR M12x50 (10) F-BT-MR 3/8x1 (3/8) F-BT-MR 3/8x1 1/2 (3/8) F-BT-MR 3/8”x2 (3/8) F-BT-MR 3/8x4 (3/8) F-BT-MR 1/2x1 1/2 (3/8) F-BT-MR 1/2x2 (3/8)	Class N for normal duty. Class H for heavy duty	100 for ≤ 5 ms

Classification according to IEC 62561-1, 2023-03:

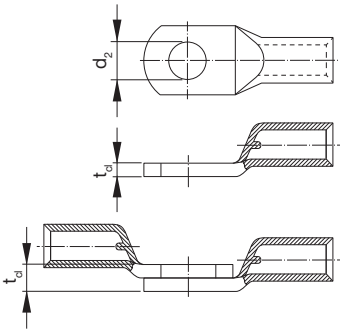
- Installation location: a) outdoors, b) indoors, c) buried in ground, d) embedded in concrete, e) embedded in materials with thermal insulation.
- Not intended to withstand a static mechanical stress.
- Including permanent and non-permanent connections.
- Connection configuration: B4-T connector.

Application recommendation

Parent material

- For more details see Hilti Cordless Stud Fusion Technical Manual
- Always review/follow the instructions (IFU) accompanying the product.

Cable lug characteristics

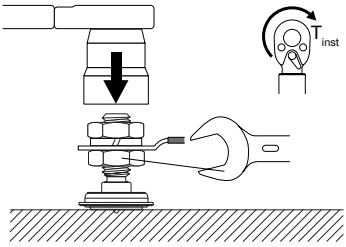
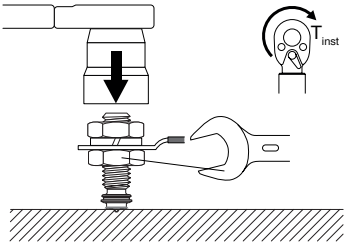
Technical drawing	Electrical connector	Total cable lug thickness t_{cl} [mm]	Inner hole diameter d [mm]
	F-BT-MR M6xL SN (4) F-BT-MR M6xL SN (6) F-BT-MR M6xL (6)	≤ 3	6.5
	F-BT-MR M8xL SN (4) F-BT-MR M8xL SN (8) F-BT-MR M8xL (8)	≤ 7	8.5
	F-BT-MR M10xL SN (10) F-BT-MR M10xL (10)	≤ 7	10.5
	F-BT-MR M12xL SN (10) F-BT-MR M12xL (10)	≤ 7	12.5
	F-BT-MR 3/8xL SN (5/32) F-BT-MR 3/8xL SN (3/8) F-BT-MR 3/8xL (3/8)	5/16" / ≤ 7 mm	7/16" / 10.5 mm
	F-BT-MR 1/2xL (3/8)	5/16" / ≤ 7 mm	1/2" / 12.5 mm

Fastener positioning in base material

- For more details see Hilti Cordless Stud Fusion Technical Manual
- Always review/follow the instructions (IFU) accompanying the product.

Specification for installation

Tightening torque – Nut to nut

Technical drawing	Fastener	Tightening torque T_{inst} [Nm]	Comment
	F-BT-MR M6xL SN (4) F-BT-MR M6xL SN (6)	8	Hold the bottom nut with a spanner while tightening the upper nut.
	F-BT-MR M8xL SN (4) F-BT-MR M8xL SN (8)	20	
	F-BT-MR M10xL SN (10)	30	
	F-BT-MR M12xL SN (10)	30	
	F-BT-MR 3/8xL SN (5/32) F-BT-MR 3/8xL SN (3/8)	22 lb-ft/ 30 Nm	
	F-BT-MR M6xL (6)	8	Hold the bottom nut with a spanner while tightening the upper nut.
	F-BT-MR M8xL (8)	20	
	F-BT-MR M10xL (10)	30	
	F-BT-MR M12xL (10)	30	
	F-BT-MR 3/8xL (3/8)	22 lb-ft/ 30 Nm	
	F-BT-MR 1/2xL (3/8)	22 lb-ft/ 30 Nm	

- These are abbreviated instructions which may vary by application.
- ALWAYS review/follow the instructions for use (IFU) accompanying the product.