

# TYPE APPROVAL CERTIFICATE

---

## This is to certify:

**That the Structural Connecting Elements**

with type designation(s)  
**HILTI F-BT-MR WELDED THREADED STUDS**

Issued to  
**Hilti AG**  
**Schaan, Liechtenstein**

is found to comply with  
**EN 1990:2002+A1:2005+AC:2010 Eurocode: Basis of structural design**  
**EN ISO 13918:2018 Welding – Studs and ceramic ferrules for arc stud welding**  
**EN ISO 14555:2017 Welding – Arc stud welding of metallic materials**

## Application :

**Refer to section Application in the certificate.**

Issued at **Hamburg** on **2023-11-06**

This Certificate is valid until **2028-11-05**.

DNV local unit: **Augsburg**

Approval Engineer: **Thilo Pabst**

for **DNV**

---

**Sven Klinger**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## PRODUCT DESCRIPTION

The F-BT fasteners are threaded studs manufactured from stainless steel wire and belonging to the CSF system. The F-BT threaded studs are fasteners with male threads (metric or inch) for attachment on one end and a weld-on stud on the other end.

F-BT-MR SN studs are used on coated parent material and are supplied with a sealing washer fixed by a metal cap. The sealing washer from chloroprene rubber prevents the parent material from corrosion around the fastener.

F-BT-MR studs are used either on coated or uncoated parent material without sealing washer. Corrosion protection of the parent material at the fastener is then to be made by painting.

The F-BT fastener will be welded on a prepared surface. These both steps will be done depending on coating and material with special tools provided by Hilti AG.

Abbreviation description:

- CSF: Cordless Stud Fusion System
- F: Fusion (technology)
- BT: Blunt Tip (fastening principle)
- MR: M = Multipurpose (Application), R = stainless steel (Corrosion resistance)
- L: Thread length [mm] or [Inches] - (e.g. 25 or 3/8)
- SN: Sealing washer (if applicable)
- ( ): minimum parent material thickness [mm] or [inches] of coated parent material

## Scope / Technical data

Designation	Item Description	Parent material			Application
		surface	Thickness		
			Minimum <sup>1</sup>	maximum	
F-BT-MR M6x25 SN (6)	Stainless steel threaded stud M6 with sealing washer.	coated	6 mm	30 mm (1 1/8 ")	Multipurpose
F-BT-MR M8x25 SN (8)	Stainless steel threaded stud M8 with sealing washer.		8 mm		Multipurpose
F-BT-MR M10x25 SN (10) F-BT-MR M10x50 SN (10)	Stainless steel threaded stud M10 with sealing washer.		10 mm		Multipurpose
F-BT-MR M12x25 SN (10) F-BT-MR M12x50 SN (10)	Stainless steel threaded stud M12 with sealing washer.		10 mm		Multipurpose
F-BT-MR M6x25 SN (4)	Stainless steel threaded stud M6 with sealing washer.		4 mm		Multipurpose, thin parent material
F-BT-MR M8x25 SN (4)	Stainless steel threaded stud M8 with sealing washer.		4 mm		Multipurpose, thin parent material
F-BT-MR M6x25 (6)	Stainless steel threaded stud M6.		6 mm		Multipurpose, no sealing washer <sup>2</sup>
F-BT-MR M8x25 (8)	Stainless steel threaded stud M8.		8 mm		Multipurpose, no sealing washer <sup>2</sup>
F-BT-MR M10x25 (10) F-BT-MR M10x50 (10)	Stainless steel threaded stud M10.		10 mm		Multipurpose, no sealing washer <sup>2</sup>
F-BT-MR M12x25 (10) F-BT-MR M12x50 (10)	Stainless steel threaded stud M12.		10 mm		Multipurpose, no sealing washer <sup>2</sup>

**Note:** <sup>1</sup> The minimum thickness given in the column applies to coated parent material.

<sup>2</sup> For F-BT-MR studs without sealing washer: The minimum parent material thickness reduces to 2 mm if studs are welded to uncoated black steel (Load reduction factor according to Technical Manual Hilti CORDLESS STUD FUSION (May 2023) – figure 6.3-4 to be observed).

Designation	Item Description	Parent material			Application
		surface	Thickness		
			Minimum <sup>1</sup>	maximum	
F-BT-MR 3/8x1 SN (3/8) F-BT-MR 3/8x1½ SN (3/8) F-BT-MR 3/8x2 SN (3/8) F-BT-MR 3/8x4 SN (3/8)	Stainless steel threaded stud 3/8" with sealing washer.	coated	3/8" (10 mm)		Multipurpose
F-BT-MR 3/8x1 SN (5/32)	Stainless steel threaded stud 3/8" with sealing washer.		5/32" (4 mm)		Multipurpose, thin parent material
F-BT-MR 3/8x1 (3/8) F-BT-MR 3/8x1½ (3/8) F-BT-MR 3/8x2 (3/8) F-BT-MR 3/8x4 (3/8)	Stainless steel threaded stud 3/8".		3/8" (10 mm)		Multipurpose, no sealing washer <sup>2</sup>
F-BT-MR 1/2x1½ (3/8) F-BT-MR 1/2x2 (3/8)	Stainless steel threaded stud 1/2".		coated, uncoated <sup>2</sup>		3/8" (10 mm)

**Note:** <sup>1</sup> The minimum thickness given in the column applies to coated parent material.

<sup>2</sup> For F-BT-MR studs without sealing washer: The minimum parent material thickness reduces to 2 mm if studs are welded to uncoated black steel (Load reduction factor according to Technical Manual Hilti CORDLESS STUD FUSION (May 2023) – figure 6.3-4 to be observed).

### INSTALLATION / COMPONENTS OF CSF FASTENING SYSTEM

The selection and installation of the Hilti F-BT threaded studs for the corresponding application and the proper assembly are to be in accordance with the instructions of the manufacturer: "Technical Manual Hilti CORDLESS STUD FUSION" (May 2023) including using of the mentioned tools / devices and including attention to a qualified Welding Procedure Specification (WPS).

#### Material specification F-BT fasteners:

##### Material specification shank:

Upper part: Metric or inch thread  
 Lower part: Interface for sealing washer and stud holder, weld area (diameter acc EN ISO 13918) with centering tip.  
 Material: Stainless steel: 1.4571 (X6CrNiMoTi17-12-2) per EN 10088-3, AISI/SAE 316Ti per ASTM A240 or A276

##### Material specification sealing washer and cap:

Washer: chloroprene rubber (CR) sealing compound  
 Cap: stainless steel A4 (1.4404 / AISI/SAE 316L), designed to clamp against the stud

## APPLICATION/LIMITATION

### CARBON STEEL PARENT MATERIAL

The parent material is limited to steel grade with a maximum ultimate tensile strength  $f_u \leq 630$  MPa (91 ksi).

The minimum ultimate tensile strength of steel is  $f_u \geq 360$  MPa (52 ksi).

Parent Material equivalent to material specification CEN ISO/TR 15608\_subgroup 1.1, 1.2 with CEV  $\leq 0.45\%$ .

Conditions of application and load data are to be observed according to the "Hilti Cordless Stud Fusion Technical Manual" (May 2023).

- The Hilti F-BT welded threaded studs are type approved for fastening of various applications to the parent material carbon steel on board of ships and other structures classed by DNV as follows:
  - Starter brackets of modular supports
  - Cable, conduit and tubing connectors
  - Trays, channels and struts for cable, conduit and tubing runs
  - Instrumentation, junction boxes, lighting
  - Pipe hangers
  - Signage
  - Door frames
  - Mounting cabinets, securing furniture, utensils, etc.

The fasteners may also be used for applications other than those listed above, subject to special consideration by the local DNV Surveyor.

- Fasteners are not being installed closer than 38 mm [1½"] from the edge of a flange or cutout and not closer than 35 mm [1.38"] between fasteners.
- Service temperature: -40°C to 60°C (-40°F to 140°F)

### The F-BT fasteners are not to be used for the following locations:

- On applications / in locations where specified above restrictions not fulfilled (parent material, thickness, distances, temperatures).
- On applications / in locations where welding in general not allowed.
- On shell plating (i.e., bottom plating, side plating, main deck plating)
- On tank- and fire rated boundaries.
- On structural members
  - with thermal stresses,
  - highly stressed members

If necessary or requested, decision to be made case by case via DNV Surveyor.

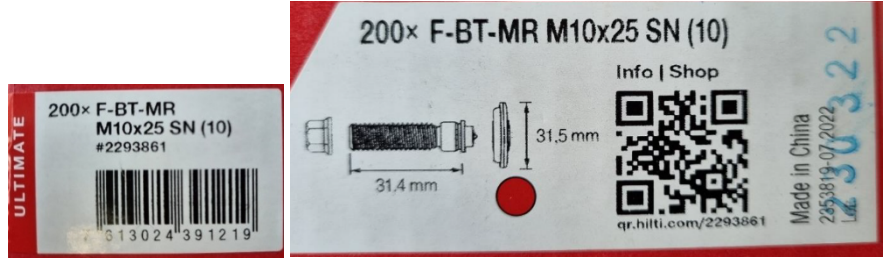
## TYPE APPROVAL DOCUMENTATION

### TESTS CARRIED OUT

Documentation of tests performed are the basis for this Type Approval as referenced in the list above and DNV Ref.-No. 262.1-040136-1

### MARKING OF PRODUCT

For traceability of products, marking shall be legible and indelible. Products are to be marked at least as follows:

<ul style="list-style-type: none"> <li>- Manufacturers name / trademark</li> <li>- Type / Designation</li> <li>- article no.</li> <li>- Lot no.</li> </ul>	<p>Marking sample:</p> 
--	---

### PERIODICAL ASSESSMENT

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with (refer to the Class Programme DNV-CP-0338, Sec. 4).

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE