Marine & Offshore

Certificate number: 74483/A1 BV
File number: ACM 139/1905/6
Product code: 0226H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Hilti Corporation

SCHAAN - LIECHTENSTEIN

for the type of product

MECHANICAL FASTENING SYSTEM

HILTI WELDED STUDS F-BT-MR MECHANICAL FASTENING SYSTEM

Requirements:
BUREAU VERITAS Rules for the Classification of Steel Ships
BUREAU VERITAS Rules for the Classification of Offshore Units
BUREAU VERITAS Rules for the Classification of Naval Ships
BUREAU VERITAS Rules for the Classification of Yachts

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 25 May 2028

For Bureau Veritas Marine & Offshore,
At BV HAMBURG, on 18 Jul 2025,
Heiko Lange

This certificate was created electronically and is valid without signature

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Mechanical fastening system: Hilti welded studs F-BT-MR.
The F-BT studs welded by Hilti CSF cordless stud fusion system. The Cordless Stud Fusion (CSF) process is a drawn arc stud welding process with shielding gas (process number 783) following EN ISO 14555. The purpose of Cordless Stud Fusion (CSF) is to weld studs to steel.
The Hilti F-BT mechanical fastening system comprises the surface preparation equipment, the stud fusion equipment, the installation equipment, the support plate and the measuring and testing equipment according to Hilti's technical manual.

1.1 Identification of components:

Component name	Designation
F-BT-MR M6x25 SN (4)	Stainless steel stud F-BT-MR SN with sealing washer for thin parent material
F-BT-MR M8x25 SN (4)	Stainless steel stud F-BT-MR SN with sealing washer for thin parent material
F-BT-MR 3/8x1 SN (5/32)	Stainless steel stud F-BT-MR SN with sealing washer for thin parent material
F-BT-MR M6x25 SN (6)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR M8x25 SN (8)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR M10x25 SN (10)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR M10x50 SN (10)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR 3/8x1 SN (3/8)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR 3/8x1-1/2 SN (3/8)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR 3/8x2 SN (3/8)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR 3/8x4 SN (3/8)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR M12x25 SN (10)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR M12x50 SN (10)	Stainless steel stud F-BT-MR SN with sealing washer
F-BT-MR M6x25 (6)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR M8x25 (8)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR M10x25 (10)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR M10x50 (10)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR 3/8x1 (3/8)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR 3/8x1-1/2 (3/8)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR 3/8x2 (3/8)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR 3/8x4 (3/8)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR M12x25 (10)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR M12x50 (10)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR 1/2x1-1/2 (3/8)	Stainless steel stud F-BT-MR without sealing washer
F-BT-MR 1/2x2 (3/8)	Stainless steel stud F-BT-MR without sealing washer

1.2 Materials:

Component	Material
F-BT-MR stud	Stainless steel 1.4571 (A5), 316Ti
Sealing ring, metal cap	Stainless steel 1.4404 (A4), 316L
Sealing ring, elastomer	Chloroprene rubber (CR)

2. DOCUMENTS AND DRAWINGS:

Designation	Revision / Date
HILTI CORDLESS STUD FUSION Technical Manual	May 2023
F-BT DATA SHEET: Stainless steel threaded studs for electrical connections	October 2024

3. TEST REPORTS:

According to the following tests:

- Evaluation report no. XE-23-10 at HILTI Aktiengesellschaft, Schaan / LIECHTENSTEIN dd. March 9, 2023
- Test report no. L22/0862_01 at gbd Lab GmbH, Dornbirn /AUSTRIA dd. 27.07.2022
- Test report no. L22/0862_02 at gbd Lab GmbH, Dornbirn /AUSTRIA dd. 19.10.2022
- Test report no. L22/0862_03a at gbd Lab GmbH, Dornbirn /AUSTRIA dd. 13.12.2022
- Test report no. XE_23_18 at HILTI Aktiengesellschaft, Schaan / LIECHTENSTEIN dd. March 3, 2023

- Test report no. XE_22_17 at HILTI Aktiengesellschaft, Schaan / LIECHTENSTEIN dd. 02 nd May 2022
- Test report no. XE-23-08 at HILTI Aktiengesellschaft, Schaan / LIECHTENSTEIN dd. February 15, 2023
- Test report no. XE_23_04 at HILTI Aktiengesellschaft, Schaan / LIECHTENSTEIN dd. 08 th March 2022
- Test report no. PW-2022-0115 at FOCP SPIEZ LABORATORY, Spiez / SWITZERLAND dd. 14.12.2022
- Test report no. PW-2022-0082 at FOCP SPIEZ LABORATORY, Spiez / SWITZERLAND dd. 25.08.2022
- Test report no. 2544_FRM at DEHN SE, Neumarkt / GERMANY dd. 05.08.2024
- Test report no. 2545_FRM at DEHN SE, Neumarkt / GERMANY dd. 05.08.2024
- Test report no. 2546_FRM at DEHN SE, Neumarkt / GERMANY dd. 05.08.2024
- Test report no. 2550_FRM at DEHN SE, Neumarkt / GERMANY dd. 30.10.2024
- Test report no. 2551_FRM at DEHN SE, Neumarkt / GERMANY dd. 30.10.2024
- Test report no. 2552_FRM at DEHN SE, Neumarkt / GERMANY dd. 30.10.2024

4. APPLICATION / LIMITATION:

4.1 The mechanical fastening system is intended for fastening applications in shipbuilding, offshore and crane structures as far as the BUREAU VERITAS Rules are complied with:
- Multi-disciplinary support
- Welded support for cable trays
- Modular support for cable trays
- Individual support
- Welded support for pipe trays
- Modular support for pipes
- Suspending ceiling
- Equipment fastening
- Shipbuilding fastening
- Earthing (Grounding), bonding (e.g. for equipment, pipe flanges, storage tanks, junction boxes etc.)

4.2 Parent material specification: Subgroup 1.1, 1.2 according to CEN ISO/TR 15608

Standard / application area	Steel grade
EN 10025-2	S235JR +N (or +AR) to S355K2 +N (or +AR)
EN 10025-3	S275N/NL to S355N/NL
ASTM	ASTM A36, ASTM 572 Grade 50
Shipbuilding steel	A, B, D, E, AH 32, DH 32, AH 36, DH 36, EH 36
Carbon equivalent value: CEV # 0.45	CEV = C + Mn / 6 + (Cr + Mo + V) / 5 + (Ni + Cu) /15

4.3 Thickness of the parent material:

	t,min	t,max
F-BT-MR M6xL SN (4) F-BT-MR M8xL SN (4)	4 mm	30 mm
F-BT-MR M6xL SN (6) F-BT-MR M6xL (6)	6 mm	30 mm
F-BT-MR M8xL SN (8) F-BT-MR M8xL (8)	8 mm	30 mm
F-BT-MR M10xL SN (10) F-BT-MR M10xL (10) F-BT-MR M12xL SN (10) F-BT-MR M12xL (10)	10 mm	30 mm
F-BT-MR 3/8xL SN (5/32)	5/32"/ 4 mm	1 1/8"/ 30 mm
F-BT-MR 3/8xL SN (3/8) F-BT-MR 3/8xL (3/8) F-BT-MR 1/2xL (3/8)	3/8"/ 10 mm	1 1/8"/ 30 mm

For F-BT fasteners without sealing washer, which are welded to uncoated parent material, the minimum parent material thickness amounts to 2 mm.

4.4 Stud positioning in parent material:

	Spacing between studs	**Edge distance**
F-BT-MR M6xL SN (4) F-BT-MR M8xL SN (4) F-BT-MR M6xL SN (6) F-BT-MR M6xL (6) F-BT-MR M8xL SN (8) F-BT-MR M8xL (8) F-BT-MR M10xL SN (10) F-BT-MR M10xL (10) F-BT-MR M12xL SN (10) F-BT-MR M12xL (10)	35 mm	38 mm
F-BT-MR 3/8xL SN (5/32) F-BT-MR 3/8xL SN (3/8) F-BT-MR 3/8xL (3/8) F-BT-MR 1/2xL (3/8)	1 3/8"/ 35 mm	1 1/2"/ 38 mm

4.5 Thickness of the fastened material:

	t,min	**t,max**
F-BT-MR M6x25 SN (4) F-BT-MR M8x25 SN (4) F-BT-MR M6x25 SN (6) F-BT-MR M8x25 SN (8) F-BT-MR M10x25 SN (10) F-BT-MR M12x25 SN (10)	3.5 mm	10 mm
F-BT-MR M6x25 (6) F-BT-MR M8x25 (8) F-BT-MR M10x25 (10) F-BT-MR M12x25 (10)	4.5 mm	10 mm
F-BT-MR M10x50 SN (10) F-BT-MR M12x50 SN (10)	3.5 mm	20 mm
F-BT-MR M10x50 (10) F-BT-MR M12x50 (10)	4.5 mm	20 mm
F-BT-MR 3/8x1 SN (5/32) F-BT-MR 3/8x1 SN (3/8)	1/8"/ 3.5 mm	3/8"/ 10 mm
F-BT-MR 3/8x1 (3/8)	3/16"/ 4.7 mm	3/8"/ 10 mm
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)	1/8"/ 3.5 mm	3/4"/ 20 mm
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 1/2x1 1/2 (3/8) F-BT-MR 1/2x2 (3/8)	3/16"/ 4.7 mm	3/4"/ 20 mm

4.6 Hilti's recommendations regarding to the tightening torque and the max. values of tension load, shear load and bending moment are dependent on the size of stud and have to be complied with.

4.7 The manufacturer's assembly instructions and recommendations are to be complied with.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 The mechanical fastening system are to be supplied by **Hilti Corporation** in compliance with the type described in this certificate.

5.2 This type of product is within the category HBV of BUREAU VERITAS Rule Note NR320 and as such does not require a BUREAU VERITAS product certificate.

5.3 **Hilti Corporation** has to make the necessary arrangements to have its works recognised by BUREAU VERITAS in compliance with the requirements of NR320 for HBV products.

5.4 For information, **Hilti Corporation** has declared to BUREAU VERITAS the following production site:
Jiaxing Chuangyuan Machinery Manufacturing Co., Ltd., Jiaxing City / CHINA

6. MARKING OF PRODUCT:

The mechanical fastening system should be clearly identified with:
- Manufacturer’s name or logo
- Type designation

7. OTHERS:

7.1 The mechanical fastening systems will be delivered with the relevant documentation / user’s guide.

7.2 It is **Hilti Corporation**’s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.3 This certificate supersedes the Type Approval Certificate N° 74483/A0 BV issued on 25 May 2023 by the Society.

***** END OF CERTIFICATE *****