



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 29-JUL-2023. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Fastening System

Model Name(s): Hilti X-BT-GR, X-BT-MR and X-BT-ER threaded fasteners

Presented to:

HILTI AKTIENGESELLSCHAFT
FELDKIRCHERSTR. 100
Liechtenstein

Intended Service:

For fastening of fastened materials to base materials of carbon steel or stainless steel in ships and in offshore structures.

Description:

Fasteners Models: X-BT-MR, X-BT-GR, X-BT-ER Fasteners: X-BT-MR M6/14 SN 8, X-BT-MR W6/14 SN 8, X-BT-MR M8/14 SN 8, X-BT-MR M10/15 SN 8, X-BT-MR W10/15 SN 8, X-BT-GR M8/7 SN 8 Grounding and bonding equipment: X-BT-ER M6/7 SN 8, X-BT-ER W6/7 SN 8, X-BT-ER M10/7 SN 8, X-BT-ER W10/7 SN 8, X-BT-ER M8/7 SN 8 Drilling Tool: SF BT 22-A, SF BT 18-A, XBT 4000-A Fastening Tool: DX 351-BT/BTG Materials at least equivalent to A4/AISI grade 316 material

Tier:

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Ratings:

1. Refer to "New Generation Hilti X-BT Threaded Fastener Specification, June 2018" for the recommended maximum tension and shear loads, in association with the 'Conditions for recommended loads' specified therein (see attachment). 2. Service Temperature: -40 to 100 degrees Celsius

Service Restrictions:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined. 1) The Hilti X-BT fasteners are to be used for fastening various materials to base metals of carbon/ stainless steel in ship and off-shore structures, according to the "New Generation Hilti X-BT Threaded Fastener Specification, June 2018". 2) To ensure that proper anchoring/fastening mechanisms take place, (i.e. pressing and fusing), the following fastening tools as recommended by the

manufacturer shall be used: Drill bit: TX-BT 4.7/7-80, TX-BT 4.7/7-110, TX-BT 4.7/7-150. Fastening Tool: DX 351-BTG for X-BT-GR M8/7 SN 8, DX 351 BT for all other fastener models. Power Load 6.8/11M Brown. 3) Application requirements and limits for the thickness of fastened material, thickness of base material spacing and edge distance, fastener selection and other installation details refer to "New Generation Hilti X-BT Threaded Fastener Specification, June 2018". 4) When type approved X-BT fasteners are to be used on structural members that are sensitive to stress patterns or variations and in areas where notch toughness is of paramount importance, the Class F curve in-air condition applies for fatigue design in case where the base material thickness ≥ 8 mm, edge distance ≥ 15 mm. This is applicable for structural steel grades with nominal yield strength ranging from 235 to 960 N/mm² 5) When type approved X-BT fasteners are to be used on structural members that are sensitive to stress patterns or variations and in areas where notch toughness is of paramount importance, the fatigue categories 100 (m=5) according to EN 1993-1-9 (2005), as described in the "New Generation Hilti X-BT Threaded Fastener Specification, June 2018", are applicable to the use of base material for S235 up to S460 grades according to EN 10025-2, EN 10025-3, EN 10025-4 and EN 10225 and for S690Q to S960Q grades according to EN 10025-6 in case where the base material thickness ≥ 8 mm, edge distance ≥ 15 mm. 6) Type approved X-BT fasteners are NOT to be used for the following locations: 6.1) On bulkheads/decks with a thickness less than 8 mm, in case through penetration of the base material is not acceptable. If through penetration is acceptable, the base material thickness can be reduced to minimum 4 mm. 6.2) Watertight boundaries

Comments:

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product The Hilti X-BT fasteners may be used to fasten materials in areas where welding or drilling for bolting is permissible. It is recommended that fasteners be installed no closer than 6 mm from the edge of a flange or cutout and no closer than 15 mm between fasteners. The following additional guidance is provided for applications on ship structures: a) Acceptable applications: a1) The securing of grating panels a2) The securing of checker plate a3) The securing of electrical cable trays a4) The securing of electrical cable clips a5) The securing of joiner bulkhead tracks to plating in deck modules a6) The securing of light duty fixtures and light hangers a7) Securing of items (i-vi) above in fire rated divisions a8) The securing of wall panel struts a9) The securing of exterior and interior outfitting a10) The securing of safety equipment a11) Use as grounding and bonding equipment b) Acceptable locations: b1) On platform decks and flats b2) On non-tight bulkheads b3) On lower decks b4) On transverse side frames b5) In superstructures and deckhouse bulkheads b6) On Topside Deck members and plating b7) On Deck Modules b8) On members and plating in non-tight bulkheads b9) On members in longitudinal and traverse frames of hulls b10) On fire rated bulkheads of superstructures with a minimum thickness of 6mm provided the fasteners are installed from the side opposite to the insulated side. Fasteners are not to be installed behind, or imbedded in, structural insulation and the insulation in no way is disturbed. c) Applications or locations where special care is recommended (see d below): c1) In members with significant thermal stresses c2) In highly stressed portions of members c3) In members subject to high, cyclic loads c4) Hangers for pipe systems with high thermal stresses c5) Hangers for sprinkler systems d) The Hilti X-BT fasteners may be used for the applications where special care is recommended by following the manufacturer's recommendation. ABS approvals are general based on the product test reports furnished by recognized institutions and laboratories which may reflect specific local conditions. If any application is in a jurisdiction where the fasteners are subject to the approval process or specific guidelines are to be followed, the approved technical data or design guidelines take precedence over technical data presented herein

Notes / Documentation:

Report No. XE-18-12, Evaluation Report New Generation X-BT 2018-05-22, Revision: -, Pages: 130 Report No. New Generation X-BT Specification Draft, 2018-05-22, Specification Draft 2018-05-22, Revision: -, Pages: 63 Drawing No. X-BT-GR-M8 Part lists, X-BT-GR-M8 Part List, 2018-05-23, Revision: A5, Pages: 4 Drawing No. X-BT-MR-M-W6 Part lists, X-BT-MR-M-W6 Part List, 2018-05-23, Revision: A6, Pages: 9 Drawing No. X-BT-MR-M8 Part lists, X-BT-MR-M8 Part List, 2018-05-23, Revision: A6, Pages: 6 Drawing No. X-BT-MR-M-W10 Part lists, X-BT-MR-M-W10 Part List, 2018-05-23, Revision: A5, Pages: 6 Drawing No. X-BT-ER part lists, X-BT-ER Part List, 2018-05-23, Revision: A7, Pages: 10 Report

No. HTL-Rankweil Tension-Shear X-BT-GR 254-172, HTL-Rankweil Tension-Shear, 2017-12-04, Revision: -, Pages: 21 Report No. MPA-Stuttgart 9000742000 X-BT Marine-Environment, MPA-Stuttgart 9000742000 X-BT Marine-Environment, 2014-02-03, Revision: -, Pages: 32 Report No. MPA-Stuttgart 9034407000 New-Generation-X-BT, MPA-Stuttgart 9034407000 New-Generation-X-BT, 2018-01-08, Revision: --, Pages: 14 Report No. Electrosuisse 17-IK-0260-S01 New-Generation-X-BT-ER Grounding, Electrosuisse 17-IK-0260-S01 New-Generation-X-BT-ER Grounding, 2017-11-22, Revision: --, Pages: 6 Report No. Universität Stuttgart, Institut für Konstruktion und Entwurf, 19.5.2018, Nr. 2018-13X, Fatigue classification of the constructional detail "Structural steel base material with the Hilti power-actuated threaded fasteners X-BT-GR and X-BT-MR", Revision: -, Pages: 54 Report No. Dehn FRM-1659 X-BT-Lightning-EN-62561-1, Dehn FRM-1659, 2017-03-17, Revision: -, Pages: 34

Term of Validity:

This Product Design Assessment (PDA) Certificate 18-HS1755518-PDA, dated 30/Jul/2018 remains valid until 29/Jul/2023 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

ABS Rules:

Rules for Conditions of Classification, Part 1 – 2018 Steel Vessel Rules 1-1-4/7.7, 1-1-A3, 1-1-A4 ABS Rules for Conditions of Classification, Part 1 – 2018 Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following: Mobile Offshore Drilling Units (2018): 3-2-2/11; 4-3-3/5.9;

**National Standards:
International Standards:**

2010 (2012 Edition) IMO Fire Test Procedures Code/Annex 2; 2004 EN 10025-2: Part 2: Technical delivery conditions for non-alloy structural steels; 2004 EN 10025-3: Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels; 2004 EN 10025-4: Part 4: Technical delivery conditions for thermomechanically rolled weldable fine grain structural steels; 2004 EN 10025-6: Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition; 2005 EN 1993-1-9: Eurocode 3: Design of steel structures; 2009 EN 10225: Weldable structural steels for fixed offshore structures: Technical delivery conditions;

Government Authority:

EUMED:

Others:

Manufacturer's Standards

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	18-HS1755518-PDA	01-AUG-2018	29-JUL-2023



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.