



Confirmation of Product Type Approval 21/SEP/2011

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

This is to certify that, 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 30/AUG/2016. 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 11/SEP/2016 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.

HILTI AKTIENGESELLSCHAFT

Model Name(s): Stainless powder-actuated Hilti X-BT threaded fasteners

Presented to:

HILTI AKTIENGESELLSCHAFT
 FELDKIRCHERSTR. 100,
 POSTFACH 333
 SCHAAN
 Liechtenstein

Intended Service:

For fastening of fastened materials to base materials of carbon steel or stainless steel in the ship and shipbuilding environment and in off-shore structures.

Description:

Fasteners Models: X-BT Models (M6 & W6, M8, M10, & W10), Composite Fasteners: X-FCM-R & X-FCM-M Fasteners: X-BT M6-24-6 SN-12-R, X-BT W6-24-6 SN-12-R, X-BT M8-15-6-R, X-BT M10-24-6-R, X-BT W10-24-6-R, X-BT M8-15-6 SN12-R, X-BT M10-24-6 SN12-R, & X-BT W10-24-6 SN12-R), Drilling Tool: XBT 4000-A & TX-BT 4/7 drills, Fastening Tool: DX 351-BT & DX 351-BTG Corrosion resistant steel threaded studs and accessories whereby fastening are made by using powder actuated tools to drive the fasteners into their final positions through a pre-drilled hole and without having to penetrate the base materials, in a process of pressing and fusing. Composite fasteners are either made from stainless material (X-FCM-R) or from duplex coated carbon steel (X-FCM-M)

Ratings:

1. Refer to "Hilti X-BT Threaded Fastener Specification" for the recommended maximum loading in tension, shear, moment and torque, in association with the 'Conditions for recommended loads' specified therein. 2. Service Temperature: - 40 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 fastenings are to be used for fastening various materials to base metals of carbon/ stainless steel in ship and off-shore structures, i.a.w. the "Hilti X-BT Threaded Fastener Specification". 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, Fastening Tool: DX 351-BT & DX 351-BTG, Power Load 6.8/11M Brown. 3) Minimum base metal strengths are to be as follows: a) Carbon Steel: Ult. Tensile Strength (f_u) = 360 N/mm² (52 ksi) b) Stainless Steel: Ult. Tensile Strength (f_u) = 360 N/mm² (52 ksi) 4) The fasteners are to be installed using installation procedures recommended by the manufacturer. 5) In general, type approved X-BT fasteners are not to be used for the following locations: a) On bulkheads/decks with a thickness less than 8 mm b) Watertight boundaries c) For attachment of structural fire protection insulation 6) 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 design is to be reviewed by ABS for acceptance and fracture toughness testing of materials is to be carried out in accordance with ABS Rules: 2-1-1/23 7) Type approved X-BT fasteners, if installed in fire rated divisions, shall be installed without the washer

Comments:

Duplicate PDA resides with Precistec S.R.O. - KOPRIVNICE. In general, 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: i) The securing of grating panels ii) The securing of checker plate iii) The securing of electrical cable trays iv) The securing of electrical cable clips v) The securing of joiner bulkhead tracks to plating in deck modules vi) The securing of light duty fixtures and light hangers vii) Securing of items 7a (i-vi) above and similar items in A-class boundaries viii) Use as grounding and bonding equipment b) Acceptable locations: i) On platform decks ii) On non-tight bulkheads iii) On lower decks iv) On transverse side frames v) In superstructures and deckhouse bulkheads vi) On Topside Deck members and plating vii) On Deck Modules viii) On members and plating in non-tight bulkheads and flats of hulls ix) On members in longitudinal and traverse frames of hulls c) Applications or locations where special care is recommended (see d below): i) In members with significant thermal stresses ii) In highly stressed portions of members iii) In members subject to high, cyclic loads iv) Hangers for pipe systems with high thermal stresses v) 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. Duplicate PDA resides with Precistec s.r.o - CZECH REPUBLIC. 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:

Supporting Documentations: X-BT M6-24-6 SN12-R, item #: 432266; X-BT W6-24-6 SN12-R, item #: 432267; X-BT M8-15-6 SN12-R, item #: 377074; X-BT M10-24-6 SN12-R, item #: 377078; X-BT W10-24-6 SN12-R, item #: 377076; X-BT M8-15-6-R, item #: 377073; X-BT M10-24-6-R, item #: 377077; X-BT W10-24-6-R, item #: 377075.

Term of Validity:

This Product Design Assessment (PDA) Certificate 03-HS369456-3-PDA, dated 12/Sep/2011 remains valid until 11/Sep/2016 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:

2011 Steel Vessels Rules 1-1-4/7.7, 1-1-Appendix 3, 2008 MODU Rules 3-2-2/11; 4-3-3/5.9

National Standards:**International Standards:**

1998 IMO Fire Test Procedures Code

Government Authority:

EUMED:**Others:** Manufacturer's Standards

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	03-HS369456-3-PDA	12/SEP/2011	11/SEP/2016

**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.