



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): Carbon steel powder-actuated Hilti X-E fasteners

Presented to:

HILTI AKTIENGESELLSCHAFT
FELDKIRCHERSTR. 100,
POSTFACH 333
SCHAAN
Liechtenstein

Intended Service:

For fastening of fastened materials to base materials of carbon steel in the marine and offshore environment.

Description:

General Purpose Fastener: EDS, X-U Profiled Sheeting Fastener: X-ENP 2K, X-ENP-19 Diaphragm Decking Fasteners: X-EDN, X-EDNK Threaded Studs: X-EM, X-EW, X-EF Composite Fasteners: X-FCM Zinc coated threaded studs, nails and accessories whereby fastenings are made by using powder actuated tools to drive the fasteners into their final positions, by displacing base material in the process.

Ratings:

For Rating Matrix and Product Test Reports refer to Hilti Direct Fastening Technology Manual for each product.

Service Restrictions:

Unit Certification is not required for this product. If the manufacturer or purchaser's request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection List of Recommended Areas and Applications: 1. The Hilti DX Fastenings are to be used for fastened and base material of carbon steel in the marine, offshore, and industrial environments, as applicable (Ref to: Product Matrix). 2. To ensure that proper anchoring/fastening mechanisms take place, i.e. clamping, keying, fusing, and brazing/soldering, besides the use of proper fastening tools and power source, the following base material strengths are to comply with; Carbon Steel : Ultimate Tensile Strength $f_u = 370 \text{ N/mm}^2$ (53.53 ksi). 3. User of the DX fasteners is to observe the Hilti Direct Fastening Technology Manual for application limitations and conditions. 4. In general, type approved X-E fasteners are not to be used in corrosive environment

and in structural members that are sensitive to stress patterns/ variations and for areas that notch toughness is of paramount importance. 5. In general, Hilti fasteners may be used to fasten materials in areas where welding or drilling for bolting is permissible. It is recommended that the fasteners be installed no closer than 15 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 ships and offshore structures: Recommended Applications and Locations: a) The securing of grating panels b) The securing of checker plate c) The securing of electrical cable trays d) The securing of electrical cable clips e) The securing of joiner bulkhead tracks to decks in the deckhouse f) The securing of furniture to lower decks and decks in the deckhouse g) The securing of members for draft stops in the deckhouse h) The securing of light duty fixtures and light hangers i) On platform decks j) On non-tight bulkheads k) On lower decks l) On transverse side frames m) In superstructures and deckhouse bulkheads n) Securing of items (a) thru (h) above and similar items in A-Class boundaries Applications and Locations where Special Care May be Appropriate* : a) In members whose operating temperature is normally below 1°C b) In members with significant thermal stresses c) In highly stressed portions of members d) In members subject to high, cyclic loads e) Hangers for pipe systems with high thermal stresses f) Hangers for sprinkler systems g) In locations particularly susceptible to corrosion. [*Hilti fasteners often may be used for the listed applications by following the Manufacturer's recommendations and guidance. The attending Surveyor and Owner are to be consulted and agree with the use of the fasteners] 6. Hilti fasteners may also be used for additional applications then those listed above. Some applications may require an engineering review in advance.

Comments: 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 Documentation: EDS, X-U (Drwg No. 211102, 381182); X-ENP 2K, X-ENP-19 (Drwg No. 380698, 298249, 322696, & 322577); X-EM, X-EW, X-EF (Drwg No. 380965, 380965, 380980, 380982, 380984, 380970, & 380973); X-FCM 35/40, item #: 26583; X-U 16 S12, item #: 237357;

Term of Validity: This Product Design Assessment (PDA) Certificate 01-HS156800A-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

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 | 01-HS156800A-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.