Certificate No: LR2128225REP
Issue Date: 25/01/2021
Expiry Date: 24/01/2024

Repair Certificate

Manufacturer	**Metalock Engineering UK Ltd**
Address	Prologis Park, Unit H5, Pilgrims Walk, Coventry, CV6 4QG, United Kingdom
Approval	Machining & Heat Treatment
Scope of Approval	**Repairs using Insitu Machining and Insitu Heat Treatment.** **Previous Lloyd's Register reference No. 0073.**
Applicability	The annealing process described in the Metalock Engineering work procedure 'Heat-treatment process description' has been developed to reduce the hardness of damaged/heat affected crankpins. Application is limited to one piece forged crankshafts made of tempering steel that have not been surface hardened by induction hardening or nitriding. Before heat treatment is undertaken the material specification, ideally including the tempering process, must be known so as to ensure the annealing temperature used does not exceed that of the original tempering. After annealing the surface hardness of the annealed area must be within the range given by the original engine manufacturer. Machining, in accordance with Metalock Engineering process description 'Machining of crankpins' dated 03.07.2013, is to result in satisfactory surface finish within original engine manufacturer tolerances. Final inspection to include the following: magnetic particle inspection, surface hardness, dimension, run-out, surface finish and crank web deflection. Before any repair is undertaken, Lloyd's Register is to be informed and their agreement obtained.

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APPROVED

Clive Arnold

Lead Metallurgist: Metallurgical Assurance to Lloyd's Register EMEA
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

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This approval is subject to compliance with the requirements of Lloyds Register. Each repair must be undertaken to a written repair procedure that has been accepted by the attending Surveyor. All work is to be completed by fully trained and authorised personnel to the Surveyor's satisfaction.

This certificate is issued to the above manufacturer and is valid until the specified expiry date.

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