



# APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:  
**AMMM00002G0**  
Revision No:  
**1**

This is to certify:

That

**Hartchrom AG**  
**Schulstraße 70, CH-9323 Steinach,**  
**Switzerland**

is an approved manufacturer of  
**General**

in accordance with  
**DNV rules for classification – Ships**

and the following particulars:

<b>Process</b>	<b>Reconditioning of surfaces by applying hard chrome plating, nickel plating and grinding</b>
<b>Particulars of the approval</b>	<b>See page 2</b>
<b>Remarks</b>	<b>Approval issued as a voluntary class service</b>

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules.  
Materials to be applied to DNV classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Hamburg** on **2022-07-07**

for **DNV**

This Certificate is valid until **2025-01-31**.

DNV local station: **Augsburg**

Approval Engineer: **Torben Schälicke**

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**Thorsten Lohmann**  
**Head of Section**

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: AM 311

Revision: 2021-03

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## Particulars of the approval

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Process	Max. dimension [mm]
Hard chrome plating	4500 x 4500 x 12000
Nickel plating	

Products:

- Large-bore engine components for two- and four-stroke engines, e.g. piston crowns, piston skirts, piston rings and valves
- Drilling and pumping equipment for exploration, e.g. drilling shafts, rotors and mud motors
- Exhaust gas turbocharger parts, e.g. turbine shafts, turbine blades and nozzle rings

Manufacturing process:

Incoming inspection, pre-treatment process (e.g. degreasing), dimension check, grinding of the surfaces to the nominal size under consideration of the applied hard chrome or nickel plating, abrasive blast cleaning (if necessary), check of dimension, manual grinding and cleaning, hard chrome plating / nickel plating, dimension check, final grinding / machining / polishing to nominal size, non-destructive testing (NDT): dimension inspection, penetrant testing (PT) and visual inspection (VT), microstructural investigation, roughness measurement

Note: renewal of initial approval PZ 2129 HH 2