

Amendment on 27 June 2024

Resolved by Technical Committee on 30 January 2024

Ultrasonic Tests for Engine Components

Object of Amendment

Rules for the Survey and Construction of Steel Ships Part D

Rules for the Survey and Construction of Inland Waterway Ships

Reason for Amendment

IACS UR M72 specifies that non-destructive tests (NDT), hydraulic tests, dimensional inspections and visual inspections are required for the main components of reciprocating internal combustion engines and these requirements have already been incorporated into the NK Rules.

With regard to NDT, when finished components (e.g. cylinder heads) are of a complex shape, it may be difficult to perform an NDT because probes cannot be applied properly to the surfaces of such components. In such cases, it was agreed that an NDT may be performed at an appropriate earlier stage of production for such components, and a revised version of the UR M72 clarifying this was adopted as UR M72(Rev.3) in April 2023.

Therefore, relevant requirements are amended in accordance with UR M72(Rev.3).

Outline of the Amendment

Specifies that for complex shaped components (e.g. cylinder heads) of reciprocating internal combustion engines, NDT may be performed at an appropriate earlier stage of production in cases where such examinations are difficult to perform on finished components.

Effective Date and Application

This amendment applies to engines for which the application for approval is submitted to the Society on or after 1 July 2024.

ID: DD23-19

Amended-Original Requirements Comparison Table (Ultrasonic Tests for Engine Components)

Amended	Original	Remarks
<p>Part D MACHINERY INSTALLATIONS</p> <p>Chapter 2 RECIPROCATING INTERNAL COMBUSTION ENGINES</p> <p>2.2 Materials, Construction and Strength</p> <p>Table D2.2 Application of Materials and Non-destructive Tests as well as Surface Inspections and Dimension Inspections to Principal Components of Reciprocating Internal Combustion Engines</p> <p>(Omitted)</p> <p>Notes:</p> <p>(1) Materials intended for the components marked by “○” or “TR” in Column I are to comply with the requirements in Part K. However, the components marked by “TR” in Column I may be in accordance with Note (9). In addition, materials intended for the components marked by “△” in Column I are to comply with the requirements in Chapter 10.</p> <p>(2) Materials intended for the components marked by “○” or “TR” in Column II are to be tested by a magnetic particle test or a liquid penetrant test as well as an ultrasonic test. <u>When a certain non-destructive test method on the finished component is impractical (for example UT for cylinder heads), the non-destructive test method may be performed at an appropriate earlier stage of production for the component.</u></p> <p>(omitted)</p> <p>EFFECTIVE DATE AND APPLICATION</p> <p>1. The effective date of the amendments is 1 July 2024.</p> <p>2. Notwithstanding the amendments to the Rules, the current requirements apply to the engines for which the</p>	<p>Part D MACHINERY INSTALLATIONS</p> <p>Chapter 2 RECIPROCATING INTERNAL COMBUSTION ENGINES</p> <p>2.2 Materials, Construction and Strength</p> <p>Table D2.2 Application of Materials and Non-destructive Tests as well as Surface Inspections and Dimension Inspections to Principal Components of Reciprocating Internal Combustion Engines</p> <p>(Omitted)</p> <p>Notes:</p> <p>(1) Materials intended for the components marked by “○” or “TR” in Column I are to comply with the requirements in Part K. However, the components marked by “TR” in Column I may be in accordance with Note (9). In addition, materials intended for the components marked by “△” in Column I are to comply with the requirements in Chapter 10.</p> <p>(2) Materials intended for the components marked by “○” or “TR” in Column II are to be tested by a magnetic particle test or a liquid penetrant test as well as an ultrasonic test.</p> <p>(omitted)</p>	<p>UR M72(Rev.3) Table M72.2, footnotes 2</p>

Amended-Original Requirements Comparison Table (Ultrasonic Tests for Engine Components)

Amended	Original	Remarks
<p>application for approval is submitted to the Society before the effective date.</p> <p>3. Notwithstanding the provision of preceding 2., the amendments to the Rules may apply to the engines for which the application for approval is submitted to the Society before the effective date upon request by the owner or the manufacturer.</p>		

Amended-Original Requirements Comparison Table (Ultrasonic Tests for Engine Components)

Amended	Original	Remarks
<p align="center">RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS</p> <p align="center">Part 7 MACHINERY INSTALLATIONS</p> <p align="center">Chapter 2 RECIPROCATING INTERNAL COMBUSTION ENGINES</p> <p>2.2 Materials, Construction and Strength</p> <p>2.2.1 Materials</p> <p>Table 7.2.2 Application of Materials and Non-destructive Tests as well as Surface Inspections and Dimension Inspections to Principal Components of Reciprocating Internal Combustion Engines</p> <p align="center">(Omitted)</p> <p>Notes:</p> <p>(1) Materials intended for the components marked by “○” or “TR” in Column I are to comply with the requirements in Part K of the Rules for the Survey and Construction of Steel Ships. However, the components marked by “TR” in Column I may be in accordance with Note (9). In addition, materials intended for the components marked by “△” in Column I are to comply with the requirements in Chapter 8.</p> <p>(2) Materials intended for the components marked by “○” or “TR” in Column II are to be tested by a magnetic particle test or a liquid penetrant test as well as an ultrasonic test. <u>When a certain non-destructive test method on the finished component is impractical (for example UT for cylinder heads), the non-destructive test method may be performed at an appropriate earlier stage of production for the</u></p>	<p align="center">RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS</p> <p align="center">Part 7 MACHINERY INSTALLATIONS</p> <p align="center">Chapter 2 RECIPROCATING INTERNAL COMBUSTION ENGINES</p> <p>2.2 Materials, Construction and Strength</p> <p>2.2.1 Materials</p> <p>Table 7.2.2 Application of Materials and Non-destructive Tests as well as Surface Inspections and Dimension Inspections to Principal Components of Reciprocating Internal Combustion Engines</p> <p align="center">(Omitted)</p> <p>Notes:</p> <p>(1) Materials intended for the components marked by “○” or “TR” in Column I are to comply with the requirements in Part K of the Rules for the Survey and Construction of Steel Ships. However, the components marked by “TR” in Column I may be in accordance with Note (9). In addition, materials intended for the components marked by “△” in Column I are to comply with the requirements in Chapter 8.</p> <p>(2) Materials intended for the components marked by “○” or “TR” in Column II are to be tested by a magnetic particle test or a liquid penetrant test as well as an ultrasonic test.</p> <p>(Omitted)</p>	<p>UR M72(Rev.3) Table M72.2, footnotes 2</p>

Amended-Original Requirements Comparison Table (Ultrasonic Tests for Engine Components)

Amended	Original	Remarks
<p><u>component.</u> (Omitted)</p> <p style="text-align: center;">EFFECTIVE DATE AND APPLICATION</p> <ol style="list-style-type: none"> 1. The effective date of the amendments is 1 July 2024. 2. Notwithstanding the amendments to the Rules, the current requirements apply to the engines for which the application for approval is submitted to the Society before the effective date. 3. Notwithstanding the provision of preceding 2., the amendments to the Rules may apply to the engines for which the application for approval is submitted to the Society before the effective date upon request by the owner or the manufacturer. 		