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 Requ	uirements Compa	arison Table (Ultrasonic T	Tests for Engine	e Components)

Amended Amended		Original	Remarks
Part D	MACHINERY INSTALLATIONS	Part D MACHINERY INSTALLATIONS	Homarks
Chapter		Chapter 2 RECIPROCATING INTERNAL COMBUSTION ENGINES	
2.2 Mater	rials, Construction and Strength	2.2 Materials, Construction and Strength	
well as Su	pplication of Materials and Non-destructive Tests as arface Inspections and Dimension Inspections to omponents of Reciprocating Internal Combustion Engines	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	
(2) M (2) M (2) pe	(Omitted) Interials 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 tote (9). In addition, materials intended for the components marked by △" in Column I are to comply with the requirements in Chapter 10. Interials intended for the components marked by "○" or "TR" in column II are to be tested by a magnetic particle test or a liquid enetrant test as well as an ultrasonic test. When a certain non-estructive 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.	Notes: (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. (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. (omitted)	UR M72(Rev.3) Table M72.2, footnotes 2
 The example 2. Notwin 	FFECTIVE DATE AND APPLICATION ffective date of the amendments is 1 July 2024. ithstanding the amendments to the Rules, the current rements apply to the engines for which the		

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

Amended		Ori	ginal	,	Remarks		
	application for approval is submi-	tted to the Society	before				
	the effective date.						
3.	Notwithstanding the provision	of preceding 2	, the				
	amendments to the Rules may a	apply to the engin	nes for				
	which the application for appro	oval is submitted	to the				
	Society before the effective da	te upon request l	by the				
	owner or the manufacturer.						

Amended-Original Requirements	Comparison	Toble (Hitrogonic	Tasts for Engine Compo	manta)
Amenaca-Original Requirements	Companison	Table (Olliasonic	resis for Engine Compe	memsj

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

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

	Amended	Original	Remarks
	component.		
	(Omitted)		
	EFFECTIVE DATE AND APPLICATION		
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.		