

# **Shapes of the Slots of Shafting Systems**

## **Amended Rules and Guidance**

Rules for the Survey and Construction of Steel Ships Part D  
Rules for the Survey and Construction of Inland Waterway Ships  
Guidance for the Survey and Construction of Steel Ships Part D  
Guidance for the Survey and Construction of Inland Waterway Ships

## **Reason for Amendment**

Formulae for the required diameter of intermediate shafts, etc. are stipulated by IACS in Unified Requirement (UR) M68 and these formulae have already been incorporated into the ClassNK Rules.

More specifically, UR M68 specifies that the diameters of intermediate shafts with longitudinal slots, the type typically used for controllable pitch propellers, are to be determined from formulae which include safety factors for low-cycle fatigue and that allowable stresses of the torsional vibrations of such shafts are to be evaluated using formulae which include safety factors for high-cycle fatigue. In addition, it specifies that the shapes and sizes of the slots are to be determined in consideration of the stress concentrations generated at the locations of such slots.

IACS conducted a review of the regulations related to the shapes and sizes of the slots and amended the dimensions of the slot width, etc. Furthermore, IACS specified that safety factors related to the allowable stresses of torsional vibrations may be calculated based upon stress concentration factors obtained through Finite Element Calculation. These revisions were adopted as UR M68(Rev.1) in August 2014.

Accordingly, relevant requirements were amended in accordance with IACS UR M68(Rev.1).

## **Outline of Amendment**

- (1) Amended requirements related to the inside diameter of hollow shafts at the locations of slots and the dimensions of the widths of such slots.
- (2) Amended requirements related to the torsional vibration of shafting to specify that Finite Element Calculation may be used for stress concentration factors at the slots of shafting systems.