

# **RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS**

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

**Part D**

**Machinery Installations**

**Rules for the Survey and Construction of Steel Ships**  
**Part D** **2014 AMENDMENT NO.2**  
**Guidance for the Survey and Construction of Steel Ships**  
**Part D** **2014 AMENDMENT NO.2**

Rule No.55 / Notice No.40      30th June 2014  
Resolved by Technical Committee on 4th February 2014  
Approved by Board of Directors on 24th February 2014

**ClassNK**  
NIPPON KAIJI KYOKAI

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# **RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS**

**Part D**

**Machinery Installations**

**RULES**

## **2014 AMENDMENT NO.2**

Rule No.55      30th June 2014

Resolved by Technical Committee on 4th February 2014

Approved by Board of Directors on 24th February 2014

Rule No.55 30th June 2014

AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Rules for the survey and construction of steel ships” has been partly amended as follows:

**Part D MACHINERY INSTALLATIONS**

Amendment 2-1

**Chapter 1 GENERAL**

**1.3 General Requirements for Machinery Installations**

**1.3.4 Fire Protections**

Sub-paragraph -3 has been amended as follows.

- 1 Machinery installations are to be free from leakages of fuel oil, lubricating oil and other flammable oils. For those from which these oils may leak, proper means of leading the leaked oil to a safe location are to be provided.
- 2 Machinery installations are to be free from the leakage of any gases that may have a harmful effect on the health of the operator as well as any flammable gases. When fear of such gas leaks exists, machinery installations are to be installed in well-ventilated spaces that are capable of purging such gases quickly.
- 3 In addition to **1.3.4**, fire protections are to comply with the requirements in **4.2**, and 5.2 ~~and 5.4.1~~, **Part R**.

**EFFECTIVE DATE AND APPLICATION (Amendment 2-1)**

1. The effective date of the amendments is 30 June 2014.

## Chapter 2 DIESEL ENGINES

### 2.4 Safety Devices

#### 2.4.5 Crankcase Oil Mist Detection Arrangements

Sub-paragraph -1 has been amended as follows.

1 Crankcase oil mist detection arrangements are required for diesel engines of 2,250kW maximum continuous power and above or having cylinders of more than 300mm bore, and in cases of engine failure, the following means are to automatically be employed. However, in cases where alternative devices deemed appropriate by the Society are provided, such devices may be used instead of crankcase oil mist detection arrangements.

- (1) In the case of ~~crosshead engines~~ low speed diesel engines (a rated speed of less than 300 rpm), alarms are to activate and speeds be reduced. (However, in cases where alternative measures such as activating alarms to request such speed reductions are taken, the manual reduction of speeds may be accepted).
- (2) In the case of ~~trunk piston engines~~ medium speed diesel engines (a rated speed of 300 rpm and above, but less than 1,400 rpm) and high speed diesel engines (a rated speed of 1,400 rpm and above), alarms are to activate and diesel engines are to be stopped or have their fuel supply shut off.

(-2 is Omitted.)

## EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 January 2015.
2. Notwithstanding the amendments to the Rules, the current requirements may apply to diesel engines whose date of application for certification is before the effective date and that are installed on ships for which the date of contract for construction\* is before the effective date.

\* “contract for construction” is defined in the latest version of IACS Procedural Requirement (PR) No.29.

### IACS PR No.29 (Rev.0, July 2009)

1. The date of “contract for construction” of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.
2. The date of “contract for construction” of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder. For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a “series of vessels” if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:
  - (1) such alterations do not affect matters related to classification, or
  - (2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.
3. If a contract for construction is later amended to include additional vessels or additional options, the date of “contract for construction” for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a “new contract” to which **1.** and **2.** above apply.
4. If a contract for construction is amended to change the ship type, the date of “contract for construction” of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:

This Procedural Requirement applies from 1 July 2009.

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# **GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS**

**Part D**

**Machinery Installations**

**GUIDANCE**

**2014 AMENDMENT NO.2**

Notice No.40      30th June 2014

Resolved by Technical Committee on 4th February 2014

AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

“Guidance for the survey and construction of steel ships” has been partly amended as follows:

**Part D MACHINERY INSTALLATIONS**

Amendment 2-1

**Annex D1.1.3-1 GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF WATERJET PROPULSION SYSTEMS**

**1.6 Electric Installations**

Paragraph 1.6.3 has been amended as follows.

**1.6.3 Electrical Installations for Steering and Reversing Systems**

In cases where hydraulic pumps for hydraulic power systems are driven by electric motors, electrical installations for steering and reversing systems are to comply with the following requirements in (1) through (87):

- (1) Each propulsion system is to be served separately by exclusive circuits fed directly from main switchboards. In cases where three or more propulsion systems are provided, these exclusive circuits may be composed of at least two systems. One of these circuits may be supplied through the emergency switchboard.
- (2) Cables used in those exclusive circuits required in (1) are to be separated as far as practicable throughout their length.
- (3) Audible and visual alarms are to be given on navigation bridges in the event of any power failure to electric motors for hydraulic pumps.
- (4) Means for indicating that electric motors for hydraulic pumps are running are to be installed on navigation bridges and positions from which main engines are normally controlled.
- (5) Short circuit protection and overload alarms are to be provided for such circuits and motors respectively. Overload alarms are to be both audible and visible and are to be situated in conspicuous positions in places from which main engines are normally controlled.
- (6) Protection against excess current, including starting currents, if provided, is to be for not less than twice the full load current of those motors or circuits so protected, and to be arranged to permit the passage of any appropriate starting currents.
- (7) In cases where a three-phase supply is used, alarms are to be provided that will indicate failure of any one of the supply phases. Such alarms are to be both audible and visible and are to be situated in conspicuous positions in places from which main engines are normally controlled.
- ~~(8) In cases where the propulsion power does not exceed 2,500 kW per thruster unit and emergency generators are provided, one hydraulic power system for the steering system (including associated control systems) is to be served by exclusive circuits fed directly from emergency switchboards. In this case, those exclusive circuits supplied through the emergency switchboards specified in (1) may be used as this circuit.~~

## **Annex D1.1.3-3                    GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF AZIMUTH THRUSTERS**

### **1.6        Electric Installations**

Paragraph 1.6.3 has been amended as follows.

#### **1.6.3        Electrical Installations for Azimuth Steering Gears**

Electrical installations for azimuth steering gears are to comply with the following requirements in (1) through (54):

- (1) Means for indicating that electric motors for steering are running are to be installed on navigation bridges and those positions from which main engines are normally controlled.
- (2) Short circuit protections and overload alarms are to be provided for such circuits and motors respectively. Overload alarms are to be both audible and visible and are to be situated in conspicuous positions in those places from which main engines are normally controlled.
- (3) Any protection against excess current, including starting currents, if provided, is to be for not less than twice the full load current of motors or circuits so protected, and is to be arranged to permit passage of appropriate starting currents.
- (4) In cases where three-phase supplies are used, alarms are to be provided that will indicate the failure of any one of the supply phases. Such alarms are to be both audible and visible and are to be situated in conspicuous positions in those places from which main engines are normally controlled.
- ~~(5) In cases where the propulsion power does not exceed 2,500 kW per thruster unit and emergency generators are provided, one azimuth steering gear (including its associated control systems) is to be served by exclusive circuits fed directly from emergency switchboards. In such cases, those exclusive circuits supplied through emergency switchboards as specified in 1.6.1-1 may be used as such circuits.~~

#### **EFFECTIVE DATE AND APPLICATION (Amendment 2-1)**

- 1.**    The effective date of the amendments is 30 June 2014.

## D13 PIPING SYSTEMS

### D13.6 Air Pipes

#### D13.6.5 Additional Requirements for Air Pipes fitted on Exposed Fore Decks

Sub-paragraph (1) has been amended as follows.

(1) Applied Loading

Forces acting in the horizontal direction on pipes and their closing devices are to be calculated by using the pressure ( $p$ ) obtained from the following formula and the largest projected area of each component.

$$p = 0.5 \rho V_w^2 C_d C_s C_p \quad (kN/m^2)$$

$\rho$  : Density of sea water ( $1.025 \text{ t/m}^3$ )

$V_w$  : Velocity of water over the fore deck (~~13.5 m/sec~~) given by the following:

$$\underline{13.5 \text{ (m/sec)} : \text{for } h_{ed} \leq 0.5h_t}$$

$$\underline{13.5 \sqrt{2 \left( 1 - \frac{h_{ed}}{h_t} \right)} \text{ (m/sec)} : \text{for } 0.5h_t < h_{ed} < h_t}$$

$h_{ed}$  : Distance from the designed maximum load line to exposed deck (m)

$h_t$  : 0.1L<sub>1</sub> or 22 m whichever is the lesser

$C_d$  : Shape coefficient (0.5 for pipes and 1.3 for air pipe heads in general, 0.8 for an air pipe heads of cylindrical form with its axis in the vertical direction)

$C_s$  : Slamming coefficient (3.2)

$C_p$  : Protection coefficient given by the following:

(0.7): for pipes and heads located immediately behind a breakwater or forecastle,

(1.0): elsewhere and immediately behind a bulwark.

## EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 July 2014.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction\* is before the effective date.  
\* “contract for construction” is defined in the latest version of IACS Procedural Requirement (PR) No.29.

### IACS PR No.29 (Rev.0, July 2009)

1. The date of “contract for construction” of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.
2. The date of “contract for construction” of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.  
For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a “series of vessels” if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:
  - (1) such alterations do not affect matters related to classification, or
  - (2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.
3. If a contract for construction is later amended to include additional vessels or additional options, the date of “contract for construction” for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a “new contract” to which **1.** and **2.** above apply.
4. If a contract for construction is amended to change the ship type, the date of “contract for construction” of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

#### Note:

This Procedural Requirement applies from 1 July 2009.