



CHINA CLASSIFICATION SOCIETY

**RULES FOR CLASSIFICATION
OF
SEA-GOING STEEL SHIPS**

CCS RULE CHANGE NOTICE

Version: 2024. RCN No.1

Effective from 1 January 2024

Beijing

CONTENTS

Part One Provisions Of Classification

Part Three Machinery Installation

Brief Introduction

Part One

1. Incorporation of UR S14(Rev.7,2022.12), “Procedures for Testing Tanks and Tight Boundaries” are divided into three parts, i.e. Part A — SOLAS Ships, Part B —SOLAS Exempt/Equivalent Ships and Part C — Non-SOLAS Ships.
2. Incorporation of UR Z17(Rev.18 Corr.1,2023.05), adding MSC.388(94) in “Firms engaged in servicing inflatable liferafts, inflatable lifejackets, hydrostatic release units and marine evacuation systems”.
3. Incorporation of UR Z23(Rev.7 Corr.2,2023.05), MSC.296(87) replaced by MSC.454(100) in “design transparency” for GBS ships.

Part Three

1. Revising alarms and safeguards for emergency diesel engines in accordance with UR M63 (Rev.1 Jan 2023).

CCS Rule Change Notice For:
RULES FOR CLASSIFICATION OF SEA-GOING STEEL
SHIPS

PART ONE

CONTENTS

CHAPTER 4 SURVEYS DURING CONSTRUCTION	1
<i>Section 3 TESTING PROCEDURES OF WATERTIGHT COMPARTMENTS</i>	1
<i>Appendix 1 HULL SURVEY FOR NEW CONSTRUCTION</i>	8
CHAPTER 5 SURVEYS AFTER CONSTRUCTION	9
<i>Appendix 8 PROCEDURAL REQUIREMENTS FOR SERVICE SUPPLIERS</i>	9

CHAPTER 4 SURVEYS DURING CONSTRUCTION^①

Section 3 TESTING PROCEDURES OF WATERTIGHT COMPARTMENTS

4.3.1 General requirements

4.3.1.1 The testing procedures of watertight compartments are to be carried out in accordance with Annex 1 of this Section, the “Procedures for Testing Tanks and Tight Boundaries”, which are composed of Part A, ~~and Part B~~ and Part C as follows:

Part A — SOLAS Ships (including CSR BC & OT)

Part B — ~~Non-SOLAS Ships and~~ SOLAS Exempt/Equivalent Ships

Part C — Non-SOLAS Ships

4.3.1.3 Testing procedures of watertight compartments are to be carried out in accordance with Part B for ~~non-SOLAS ships and~~ those SOLAS ships (including CSR BC & OT) for which:

(1) the shipyard provides documentary evidence of the shipowner’s agreement to a request to the flag Administration for an exemption from the application of SOLAS Reg. II-1/11, or for an equivalency agreeing that the content of Part B is equivalent to SOLAS Reg. II-1/11; and

(2) the above-mentioned exemption/equivalency has been granted by the responsible flag Administration.

4.3.1.4 Testing procedures of watertight compartments are to be carried out in accordance with PART C for non-SOLAS ships, see SOLAS Chapter I, Regulation 1 and Regulation 3.

Annex 1

Procedures for Testing Tanks and Tight Boundaries

Part A - SOLAS Ships

1 General

1.1 These test procedures are to confirm the watertightness of tanks and watertight boundaries and the structural adequacy of tanks which ~~consist of form part of~~ the watertight subdivisions^② of ships. These procedures may also be applied to verify the weathertightness of structures and shipboard outfitting. The tightness of all tanks and watertight boundaries of ships during new construction and those relevant to major conversions or major repairs^③ is to be confirmed by these test procedures prior to the delivery of the ship.

3 Test Types and Definitions

3.3 The ‘top of the overflow’ is defined as being the top of any overflow system which is used to prevent overfilling of a tank. Such system can be an overflow pipe, airpipe, intermediate tank. For gravity tanks (i.e. sewage, grey water and similar tanks, not filled with pumps) the top of the overflow is to be taken as the highest point of the filling line.

Note: Gauging devices are not considered equivalent to an overflow system with the exception of fuel oil overflow tanks not intended to hold fuel which have been fitted with a level alarm.

Where a tank is fitted with multiple means of preventing overfilling, the decision on which overflow system is to be used to determine the test head is to be based on the highest point to which the liquid may rise in service.

① The requirements for initial classification surveys of ships under construction are given in 5.14.2 of Section 14 of Chapter 5.

② Watertight subdivision means the transverse and longitudinal subdivisions of the ship required to satisfy the subdivision requirements of SOLAS Chapter II-1.

③ Major repair means a repair affecting structural integrity.

4 Test Procedures

4.2 Structural test procedures

4.2.1 Type and time of test

Where a structural test is specified in Table 1 or Table 2, a hydrostatic test in accordance with 4.4.1 will be acceptable. Where practical limitations (strength of building berth, light density of liquid, etc.) prevent the performance of a hydrostatic test, a hydropneumatic test in accordance with 4.4.2 may be accepted instead.

A hydrostatic test or hydropneumatic test for the confirmation of structural adequacy may be carried out while the vessel is afloat, provided the results of a leak test are confirmed to be satisfactory before the vessel is afloat.

Alternative equivalent tank testing procedures may be considered for tanks which are constructed from composite materials such as glass reinforced plastic (GRP) and fibre reinforced plastic (FRP) based on the recommendations of the composite manufacturer.

4.4 Test methods

4.4.1 Hydrostatic test

(1) Unless another liquid is approved, hydrostatic tests are to consist of filling the space with fresh water or sea water, whichever is appropriate for testing, to the level specified in Table 1 or Table 2. See also 4.7.

(2) In cases where a tank is designed for cargo densities greater than sea water and testing is with fresh water or sea water, the testing pressure height is to simulate the actual loading for those greater cargo densities as far as practicable, but the test pressure shall not exceed the maximum design internal pressure at the top of tank.

(3) All external surfaces of the tested space are to be examined for structural distortion, bulging and buckling, other related damage and leaks.

Test Requirements for Tanks and Boundaries

Table 1

	Tank or boundary to be tested	Test type	Test head or pressure	Remark
1	Double bottom tanks ⁴	Leak and structural ¹	The greater of - top of the overflow ¹⁰ , - to 2.4 m above top of tank ² , or - to bulkhead deck	
2	Double bottom voids ⁵	Leak	See 4.4.4 through 4.4.6, as applicable	including pump room double bottom and bunker tank protection double hull required by MARPOL Annex I
3	Double side tanks	Leak and structural ¹	The greater of - top of the overflow ¹⁰ , - to 2.4 m above top of tank ² , or - to bulkhead deck	
4	Double side voids	Leak	See 4.4.4 through 4.4.6, as applicable	
5	Deep tanks other than those listed elsewhere in this table	Leak and structural ¹	The greater of - top of the overflow ¹⁰ , or - to 2.4 m above top of tank ²	
6	Cargo oil tanks	Leak and structural ¹	The greater of - top of the overflow ¹⁰ , - to 2.4m above top of tank ² , or - to top of tank ² plus setting of any pressure relief valve <u>the design vapour pressure</u>	
7	Ballast hold of bulk carriers	Leak and structural ¹	Top of cargo hatch coaming	
8	Peak tanks	Leak and structural ¹	The greater of - top of the overflow ¹⁰ , or - to 2.4 m above top of tank ²	After peak to be tested after installation of stern tube
9	.1 Fore peak spaces with equipment	Leak	See 4.4.3 through 4.4.6, as applicable	
	.2 Fore peak voids	Leak	See 4.4.4 through 4.4.6, as applicable	

	Tank or boundary to be tested	Test type	Test head or pressure	Remark
	.3 Aft peak spaces with equipment	Leak	See 4.4.3 through 4.4.6, as applicable	
	.4 Aft peak voids	Leak	See 4.4.4 through 4.4.6, as applicable	After peak to be tested after installation of stern tube
10	Cofferdams	Leak	See 4.4.4 through 4.4.6, as applicable	
11	.1 Watertight bulkheads	Leak ⁸	See 4.4.3 through 4.4.6, as applicable ⁷	
	.2 Superstructure end bulkheads	Leak	See 4.4.3 through 4.4.6, as applicable	
12	Watertight doors below freeboard or bulkhead deck	Leak ^{6,7}	See 4.4.3 through 4.4.6, as applicable	
13	Double plate rudder blades	Leak	See 4.4.4 through 4.4.6, as applicable	
14	Shaft tunnels clear of deep tanks	Leak ³	See 4.4.3 through 4.4.6, as applicable	
15	Shell doors	Leak ³	See 4.4.3 through 4.4.6, as applicable	
16	Weathertight hatch covers and closing appliances	Leak ^{3,7}	See 4.4.3 through 4.4.6, as applicable	Hatch covers closed by tarpaulins and battens excluded
17	Dual purpose tanks/dry cargo hatch covers	Leak ^{3,7}	See 4.4.3 through 4.4.6, as applicable	In addition to structural test in item 6 or 7
18	Chain lockers	Leak and structural ¹	Top of chain pipe	
19	L.O. sump. tanks and other similar tanks/spaces under main engines	Leak ⁹	See 4.4.3 through 4.4.6, as applicable	
20	Ballast ducts	Leak and structural ¹	The greater of - ballast pump maximum pressure, or - setting of any pressure relief valve	
21	Fuel Oil Tanks	Leak and structural ¹	The greater of - top of the overflow ¹⁰ , - to 2.4m above top of tank ² , or - to top of tank ² plus <u>setting of any pressure relief valves the design vapour pressure</u> , or - to bulkhead deck	
22	Fuel oil overflow tanks not intended to hold fuel	Leak and structural¹	The greater of - top of the overflow¹⁰, - to 2.4m above top of tank², or - to bulkhead deck	

Notes:

1 Refer to section 4.2.2.

2 The top of a tank is the deck forming the top of the tank, excluding any hatchways.

3 Hose Test may also be considered as a medium of the test. See 3.2.

4 Including tanks arranged in accordance with the provisions of SOLAS regulation II-1/9.4.

5 Including duct keels and dry compartments arranged in accordance with the provisions of SOLAS regulation II-1/11.2 and II-1/9.4 respectively, and/or oil fuel tank protection and pump room bottom protection arranged in accordance with the provisions of MARPOL Annex I, Chapter 3, Part A regulation 12A and Chapter 4, Part A, regulation 22 respectively.

6 Where water tightness of a watertight door has not been confirmed by prototype test, testing by filling watertight spaces with water is to be carried out. See SOLAS regulation II-1/16.2 and [MSC/Circ.1176 MSC.1/Circ.1572/Rev.1](#).

7 As an alternative to the hose testing, other testing methods listed in 4.4.7 through 4.4.9 may be applicable subject to adequacy of such testing methods being verified. See SOLAS regulation II-1/11.1. For watertight bulkheads (item 11.1) alternatives to the hose testing may only be used where a hose test is not practicable.

8 A "Leak and structural test", see 4.2.2 is to be carried out for a representative cargo hold if intended for in-port ballasting. The filling level requirement for testing cargo holds intended for in-port ballasting is to be the maximum loading that will occur in-port as indicated in the loading manual.

9 Where L.O. sump tanks and other similar spaces under main engines intended to hold liquid form part of the watertight subdivision of the ship, they are to be tested as per the requirements of Item 5, Deep tanks other than those listed elsewhere in this table.

[10 Refer to section 3.3.](#)

Additional Test Requirements for Special Service Ships/Tanks **Table 2**

	Type of Ship/Tank	Structures to be tested	Type of Test	Test Head or Pressure	Remark
1	Liquefied gas carriers	Integral tanks	Leak and structural	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	
		Hull structure supporting membrane or semi-membrane tanks	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	
		Independent tanks type A	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	
		Independent tanks type B	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	
		Independent tanks type C	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	Refer to Rules for Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	
2	Edible liquid tanks	Independent tanks	Leak and structural ¹	The greater of - top of the overflow ³ , or - to 0.9 m above top of tank ²	
3	Chemical carriers	Integral or independent cargo tanks	Leak and structural ¹	The greater of - to 2.4 m above top of tank ² , or - to top of tank ² plus setting of any pressure-relief valve <u>the design vapour pressure</u>	Where a cargo tank is designed for the carriage of cargoes with specific gravities larger than 1.0, an appropriate additional head is to be considered <u>see section 4.4.1</u>

Notes:

1 Refer to section 4.2.2.

2 Top of tank is deck forming the top of the tank excluding any hatchways.

[3 Refer to section 3.3.](#)

Part B - ~~Non-SOLAS Ships and~~ SOLAS Exemption/Equivalent Ships

1 General

1.1 These test procedures are to confirm the watertightness of tanks and watertight boundaries and the structural adequacy of tanks which ~~consist of~~ form part of the watertight subdivisions^① of ships. These procedures may also be applied to verify the weathertightness of structures and shipboard outfitting. The tightness of all tanks and watertight boundaries of ships during new construction and those relevant to major

① Watertight subdivision means the main transverse and longitudinal subdivisions of the ship required to satisfy the subdivision requirements of SOLAS Chapter II-1.

conversions or major repairs^① is to be confirmed by these test procedures prior to the delivery of the ship.

1.2 Testing procedures of watertight compartments are to be carried out in accordance with Part B for ~~non-SOLAS ships and~~ those SOLAS ships (including CSR BC & OT) for which:

- (1) the shipyard provides documentary evidence of the shipowner's agreement to a request to the flag Administration for an exemption from the application of SOLAS Reg. II-1/11, or for an equivalency agreeing that the content of Part B is equivalent to SOLAS Reg. II-1/11; and
- (2) the above-mentioned exemption/equivalency has been granted by the responsible flag Administration.

2 Application

2.1 Testing procedures are to be carried out in accordance with the requirements of Part A in association with the following alternative procedures for 4.2.2 "Testing schedule for new construction or major structural conversion" of Part A ~~and alternative test requirements for Table 1 of Part A.~~

2.5 For tanks which are less than 2 m³ in volume, structural testing may be replaced by leak testing.

2.56 Where the structural adequacy of the tanks ~~and spaces~~ of a vessel were verified by the structural testing required ~~in Part A, Table 1 by either PART A or PART B 2.3,~~ subsequent vessels in the series (i.e. sister ships built from the same plans at the same shipyard) may be exempted from structural testing of tanks, provided that:

- (1) water-tightness of boundaries of all tanks ~~and spaces is are~~ verified by leak tests and thorough inspections are carried out;
- (2) structural testing is carried out for at least one tank ~~or space~~ of each type among all tanks/~~spaces~~ of each sister vessel;
- (3) additional tanks ~~and spaces~~ may require structural testing if found necessary after the structural testing of the first tank or if deemed necessary by the attending Surveyor.

~~For cargo space boundaries adjacent to other compartments in tankers and combination carriers or boundaries of tanks for segregated cargoes or pollutant cargoes in other types of ships, the provisions of paragraph Part B 2.3 shall apply in lieu of paragraph Part B 2.5.2.~~

For cargo space boundaries adjacent to other compartments in tankers and combination carriers or boundaries of tanks for segregated cargoes or pollutant cargoes in other types of ships, structural tests are to be carried out for at least one tank of a group of tanks having structural similarity (i.e. same design conditions, alike structural configurations with only minor localised differences determined to be acceptable by the attending Surveyor) on each vessel provided all other tanks are tested for leaks by an air test.

2.67 Sister ships built (i.e. keel laid) two years or more after the delivery of the last ship of the series, may be tested in accordance with Part B 2.56 at the discretion of CCS, provided that:

- (1) general workmanship has been maintained (i.e. there has been no discontinuity of shipbuilding or significant changes in the construction methodology or technology at the yard, shipyard personnel are appropriately qualified and demonstrate an adequate level of workmanship as determined by CCS); and
- (2) an NDT plan is implemented and evaluated by CCS for the tanks not subject to structural tests. Shipbuilding quality standards for the hull structure during new construction are to be reviewed and agreed during the kick-off meeting. ~~Structural fabrication is to be carried out in accordance with Appendix 2 of this Chapter, "Shipbuilding and Repair Quality Standard", or a recognised fabrication standard which has been accepted by CCS prior to the commencement of fabrication/construction.~~ The work is to be carried out in accordance with the Rules and under survey by CCS.

① Major repair means a repair affecting structural integrity.

Part C - Non-SOLAS Ships

1 General

1.1 These test procedures are to confirm the watertightness of tanks, watertight boundaries and the structural adequacy of tanks which form part of the watertight subdivisions^① of ships. These procedures may also be applied to verify the weathertightness of structures and shipboard outfitting. The tightness of all tanks and watertight boundaries of ships during new construction and those relevant to major conversions or major repairs^② is to be confirmed by these test procedures prior to the delivery of the ship.

1.2 Testing procedures of watertight compartments are to be carried out in accordance with PART C for non-SOLAS ships, see SOLAS Chapter I, Regulation 1 and Regulation 3.

2 Application

2.1 Testing procedures are to be carried out in accordance with the requirements of PART A in association with the following alternative procedures for 4.2.2 of PART A “Testing Schedule for New Construction or Major Structural Conversion”.

2.2 The tank boundaries are to be tested from at least one side. The tanks for structural test are to be selected so that all representative structural members are tested for the expected tension and compression.

2.3 The requirements given in Table 1 of Part A to structurally test tanks to 2.4 metres above the top of the tank do not apply. Instead, the minimum test pressure for structural testing is to be taken as $0.3D + 0.76$ metres above the top of the tank where the top of the tank is the deck forming the top of the tank, excluding any hatchways and D is the depth of the ship. The minimum test pressure need not be taken greater than 2.4 metres above the top of the tank.

2.4 Structural tests are to be carried out for at least one tank of a group of tanks having structural similarity (i.e. same design conditions, alike structural configurations with only minor localised differences determined to be acceptable by the attending Surveyor) on each vessel provided all other tanks are tested for leaks by an air test. The acceptance of leak testing using an air test instead of a structural test does not apply to cargo space boundaries adjacent to other compartments in tankers and combination carriers or the boundaries of tanks for segregated cargoes or pollutant cargoes in other types of ships.

2.5 Additional tanks may require structural testing if found necessary after the structural testing of the first tank.

2.6 For tanks which are less than 2 m³ in volume, structural testing may be replaced by leak testing.

2.7 Where the structural adequacy of the tanks and spaces of a vessel were verified by the structural testing required by either PART A or PART C section 2.4, subsequent vessels in the series (i.e. sister ships built from the same plans at the same shipyard) may be exempted from structural testing of tanks, provided that:

- (1) water-tightness of boundaries of all tanks and spaces are verified by leak tests and thorough inspections are carried out;
- (2) structural testing is carried out for at least one tank or space among all tanks/spaces of each sister vessel;
- (3) additional tanks and spaces may require structural testing if found necessary after the structural testing of the first tank or if deemed necessary by the attending Surveyor.

For cargo space boundaries adjacent to other compartments in tankers and combination carriers or boundaries of tanks for segregated cargoes or pollutant cargoes in other types of ships, structural tests are to be carried out for at least one tank of a group of tanks having structural similarity (i.e. same design conditions, alike structural configurations with only minor localised differences determined to be acceptable by the attending Surveyor) on each vessel provided all other tanks are tested for leaks by an air test.

For cargo space boundaries adjacent to other compartments in tankers and combination carriers or boundaries of tanks for segregated cargoes or pollutant cargoes in other types of ships, structural tests are to be carried out for at least one tank of a group of tanks having structural similarity (i.e. same design conditions, alike structural configurations with only minor localised differences determined to be acceptable by the attending Surveyor) on each vessel provided all other tanks are tested for leaks by an air test.

2.8 Sister ships built (i.e. keel laid) two years or more after the delivery of the last ship of the series, may be tested in accordance with PART C 2.7 at the discretion of CCS, provided that:

① Watertight subdivision means the main transverse and longitudinal subdivisions of the ship.

② Major repair means a repair affecting structural integrity.

(1) general workmanship has been maintained (i.e. there has been no discontinuity of shipbuilding or significant changes in the construction methodology or technology at the yard, shipyard personnel are appropriately qualified and demonstrate an adequate level of workmanship as determined by CCS); and
(2) an NDT plan is implemented and evaluated by CCS for the tanks not subject to structural tests. Shipbuilding quality standards for the hull structure during new construction are to be reviewed and agreed during the kick-off meeting. The work is to be carried out in accordance with the Rules and under survey of CCS.

Appendix 1 HULL SURVEY FOR NEW CONSTRUCTION

Annex 2 Requirements for Tankers and Bulk Carriers subject to SOLAS Reg. II-1/3-10 (Goal-based ship construction standards for bulk carriers and oil tankers)

2. Design Transparency

2.1 For ships subject to compliance with IMO Res. MSC.287(87), IMO Res. MSC.290(87), IMO Res. [MSC.296\(87\)](#) [MSC.454\(100\)](#) and IMO MSC.1/Circ.1343, readily available documentation is to include the main goal-based parameters and all relevant design parameters that may limit the operation of the ship.

CHAPTER 5 SURVEYS AFTER CONSTRUCTION

Appendix 8 PROCEDURAL REQUIREMENTS FOR SERVICE SUPPLIERS

Annex 1

Special Requirements for Various Categories of Service Suppliers

5. Firms engaged in servicing inflatable liferafts, inflatable lifejackets, hydrostatic release units and marine evacuation systems

5.2 Equipment and facilities – IMO resolution A.761(18), as amended by resolution MSC.55(66) [and by MSC.388\(94\)](#) gives recommendations on conditions for the approval of servicing stations for inflatable liferafts which are to be observed as relevant. Where inflatable liferafts are subject to extended service intervals, MSC.1/Circ.1328 should also be followed.

5.3 Procedures and instructions – The supplier is to have documented procedures and instructions for how to carry out service of equipment. Where inflatable liferafts are subject to extended service intervals in accordance with the requirements of SOLAS regulation III/20.8.3, MSC.1/Circ.1328 should be followed in addition to resolution A.761(18), as amended by resolution MSC.55(66) [and by MSC.388\(94\)](#).

5.5 Reference documents – The service supplier is to have access to the following documents:

- IMO resolution A.761(18) – Recommendation on Conditions for the Approval of Servicing Stations for Inflatable Liferafts (adopted on 4 November 1993), as amended by resolution MSC.55(66) [and by MSC.388\(94\)](#);
- IMO resolution MSC.55(66);
- [IMO resolution MSC.388\(94\)](#);
- IMO MSC.1/Circ.1328 – Guidelines for the Approval of Inflatable Liferafts Subject to Extended Service Intervals Not Exceeding 30 Months;
- Manufacturer’s servicing manuals, servicing bulletins, instructions and training manuals, as appropriate;
- Type approval certificates, showing any conditions that may be appropriate during the servicing and/or maintenance of inflatable liferafts, inflatable lifejackets, and hydrostatic release units;
- LSA Code/Chapter IV, 1995 SOLAS Conference Resolution 4 regarding marine evacuation systems.

CCS Rule Change Notice For:
RULES FOR CLASSIFICATION OF SEA-GOING STEEL
SHIPS

PART THREE

CONTENTS

CHAPTER 9	DIESEL ENGINES	1
<i>Section 9</i>	<i>ALARMS AND SAFEGUARDS FOR EMERGENCY DIESEL ENGINES</i>	<i>1</i>

CHAPTER 9 DIESEL ENGINES

Section 9 ALARMS AND SAFEGUARDS FOR EMERGENCY DIESEL ENGINES

9.9.1 General requirements

9.9.1.2 This Section applies to diesel engines, [which use distillate marine fuels covered by ISO 8217:2017](#), required to be immediately available in an emergency and capable of being controlled remotely or automatically operated.

9.9.2 Alarms and safeguards

Parameter	≥ 220 kW Alarm activation	< 220 kW Shutdown with alarm
Lubricating oil pressure	Low	Low
Lubricating oil temperature ^①	High	
Temperature of cooling water or cooling air	High	High
Pressure or flow of cooling water ^①	Low	
Overspeed activated ^①	Alarm and shutdown for overspeed	Shutdown
Fuel oil leakage from high pressure pipes (fuel injection pipes and common rails)	Oil leakage	Oil leakage
Activation of oil mist detection concentration in crankcase ^① arrangements (or activation of the temperature monitoring systems or equivalent devices of: - the engine main and crank bearing oil outlet; or - the engine main and crank bearing) ^②	High	

Note: ① for engines having a power of or more than 220 kW.

①② only for engines having a power of not less than 2,250 kW or a cylinder bore of more than 300 mm.