Maritime Rules

Part 40F: Design, Construction and Equipment – Hovercraft

MNZ Consolidation

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Part objective

Part 40F prescribes the requirements for the design, construction and equipment of commercial hovercraft operating over and in New Zealand inland and marine waters.

The authority for making Part 40F is found in section 36(1)(a), 36(1)(c), 36(1)(d), 36(1)(f), 36(1)(j), 36(1)(k), 36(1)(q), 36(1)(t), and 36(1)(v) of the Maritime Transport Act 1994.

Maritime rules are disallowable instruments under the Legislation Act 2012. Under that Act, the rules are required to be tabled in the House of Representatives. The House of Representatives may, by resolution, disallow any rules. The Regulations Review Committee is the select committee responsible for considering rules under that Act.

History of Part 40F

Part 40F first came into force on 27 May 2004 and now incorporates the following amendments:

Amendment	Effective date
Amendment 1	4 September 2008
Amendment 2	30 July 2009
Amendment 3	1 April 2011
Amendment 4	1 April 2014
Amendment 5	7 August 2014
Amendment 6	1 January 2015
Amendment 7	1 April 2015
Amendment 8	1 April 2015
Amendment 9	1 November 2016

Summary of amendments

Amendment 1	
Maritime (Various Amendments) Rules 2008	40F.4, Appendix 1: Clause 10.3(1) & Clause 16
Amendment 2	
Maritime (Various Amendments) Rules 2009, Parts 21-80	40F.8(2), 40F.16(1)(b), Appendix 2
Amendment 3	
Maritime Rules Various Amendments 2011	40F.2, 40F.4(2)(c)(i), 40F.14(3)(a), Appendix 1: Clauses 3.3(a)&(b), 6.2(3), 8.2(2), 9.2(2)(b), 10.2(2)
Amendment 4	
Parts 20, 31, 32, 34 and 35: Consequential Amendments	40F.2, 40F.8
Amendment 5	
Part 40A, Part 40C, Part 40D, Part 40E, Part 40F, and Part 42A: Amendment 2014	Appendix 1
Amendment 6	
Maritime Rules Various Amendments 2014	40F.12(b)(ii), Appendix 1: Clauses 9.1(1), 9.2(2)(a), 9.3(2), 10.3(2)
Amendment 7	
Maritime Rules Various Amendments 2015	Part objective, Appendix 3.1, Appendix 4.2, Appendix 13.1
Amendment 8	
Maritime Rules Various IMO-related Amendments 2015	40F.2, 40F.13(1)(a), 40F.14, 40F.16(2)(c)
Amendment 9	
Maritime Rules Various Amendments 2016	40F.2, 40F.8, 40F.11, 40F.12, 40F.17

All signed rules can be found on our website:

http://www.maritimenz.govt.nz/Rules/List-of-all-rules/Part40F-maritime-rule.asp

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General

40F.1 Entry into force

Part 40F comes into force on 27 May 2004.

40F.2 Definitions

Act means the Maritime Transport Act 1994:

authorised person means any person who holds a valid certificate of recognition issued under section 41 of the Maritime Transport Act 1994 as an authorised person for the purposes of inspecting light craft and auditing light craft operations under this Part:

authorised surveyor means any person who holds a valid certificate of recognition issued under section 41 of the Maritime Transport Act 1994 as an authorised surveyor for the purposes of design approval and issue of the certificate of construction of a light craft required by rule 40F.7 or for the purposes of the issue of a High-Speed Craft Safety Certificate required by rule 40F.13:

coastal limits has the same meaning as in Part 20:

Class I light craft means any hovercraft having open accommodation for up to 6 persons or a maximum design payload of not more than 500 kilograms:

Class II light craft means any hovercraft having closed accommodation for up to 12 persons or a maximum design payload of more than 500 kilograms but not more than 1000 kilograms:

commercial hovercraft means a hovercraft that is not a pleasure hovercraft:

enclosed water limits has the same meaning as in Part 20:

fire-restricting material means material that has properties complying with the criteria for qualifying products as 'fire-restricting materials' in the *Standard for Qualifying Marine Materials for High Speed Craft as Fire-Restricting Materials* adopted by the International Maritime Organization by resolution MSC.40(64):

hovercraft means any craft or thing deriving full support in the atmosphere from the reaction of air against the surface of the water over which it operates:

inshore limits has the same meaning as in Part 20:

light craft means any commercial hovercraft designed to carry not more than 12 persons or a maximum design payload of not more than 1000 kilograms:

New Zealand inland waters means all rivers and other inland waters of New Zealand, which are navigable:

New Zealand marine waters means—

(a) the territorial sea of New Zealand; and

(b) the waters of the exclusive economic zone of New Zealand:

owner means—

(a) in relation to a hovercraft registered in New Zealand under the Ship Registration Act 1992, the registered owner of the hovercraft:

(b) in relation to an unregistered hovercraft or a registered hovercraft that does not have a registered owner, the person who is for the time being responsible for the management of the hovercraft:

payload means any load carried by a hovercraft and includes the weight of any persons carried:

place of refuge means any natural or artificial sheltered area which may be used as a shelter by a hovercraft under conditions likely to endanger its safety:

pleasure hovercraft has the same meaning as 'pleasure craft' in the Act:

recognised organisation means an organisation that has entered into a memorandum of agreement with the Director in compliance with the International Maritime Organization's Code for Recognized Organizations (RO Code), whereby that organisation may carry out surveys and issue convention certificates on behalf of the Director in respect of the International Convention for the Safety of Life at Sea:

restricted limits has the same meaning as in Part 20.

40F.3 Application

This Part applies to commercial hovercraft operating over and in New Zealand inland and marine waters.

40F.4 Maritime New Zealand number

(1) The owner and the master of—

(a) a ship built prior to the 4th September 2008 must ensure that the ship is permanently marked with the letters 'MSA' or 'MNZ', followed by a number issued to the ship by the Director; or

(b) a ship built on or after the 4th September 2008 must ensure that the ship is permanently marked with the letters 'MNZ' followed by a number issued to the ship by the Director.

(2) The letters and number must be—

(a) clearly marked; and

(b) dark on a light background or light on a dark background; and

(c) in characters at least—

(i) 50 mm high, in the case of a Class I light craft; and

(ii) 75 mm high on all other hovercraft; and

(d) located on both sides of the craft on hard structure where it is clearly visible to persons not on the craft but adjacent to the craft.

Light craft

40F.5 Compliance

(1) Subject to paragraph (2), the owner of any light craft must not allow that light craft to be operated unless—

(a) the light craft and its equipment comply with the requirements of rules 40F.6 to 40F.10 inclusive; and

(b) a safe operational plan is prepared and approved by the authorised person in accordance with rule 40F.8; and

(c) each light craft and its equipment undergo the inspections by the authorised person required by rule 40F.9; and

(d) the owner's operation of the light craft undergoes the audits by the authorised person required by rule 40F.9; and

(e) the owner is in possession of a current certificate of compliance in respect of the light craft.

(2) The owner of a light craft is not required to hold a valid certificate of compliance for that light craft until 27 November 2004.

(3) The owner of any light craft must not permit that light craft to be used for racing.

40F.6 Operating limits

A person must not operate a light craft beyond restricted limits.

40F.7 Design, construction and equipment

The owner of a light craft must ensure that the light craft complies with the design, construction and equipment requirements of Appendix 1, and that the light craft—

(a) has its design approved by an authorised surveyor in accordance with clause 11.1 of Appendix 1; and

(b) is issued with a certificate of construction by an authorised surveyor in accordance with clause 15.1 of Appendix 1.

40F.8 Safe operational plans

(1) The owner of a light craft must provide a safe operational plan which is related to the specific operation of the owner's light craft.

(2) The safe operational plan must include at least the following—

(a) a record of design approval and the certificate of construction issued under clause 15 of Appendix 1, for each craft; and

(b) details of each craft's design limitations; and

(c) loading procedures including any distribution and securing of loads for each craft; and

(d) operational route information; and

(e) a pre-operational safety check list; and

(f) identification of the person responsible for decision to cancel or delay voyages; and

(g) information regarding the handling, control and performance of each craft; and

(h) a description and operational details of each craft's fire appliances and life saving appliances; and

(i) an evacuation procedure for each craft in event of emergency; and

(j) contingency plans for rescue assistance, including land based support arrangements; and

(k) details of driver experience and qualifications required for each craft[1]; and

(l) communication arrangements between craft, the shore and emergency services; and

(m) a planned maintenance schedule for each craft, its skirt, motors and systems with a record of the work undertaken; and

(n) a record of the maintenance and servicing of each craft's fire appliances and life saving appliances; and

(o) a record of each driver employed with their qualifications, training, experience, medical and first aid certificates; and

(p) a procedure for removing craft from the water, lifting, transporting it and dismantling and reassembling it, as may be relevant.

The safe operational plan may refer to the manufacturer's manual or handbook required to be supplied for the craft by clause 14 of Appendix 1, provided that manual or handbook is retained as part of the safe operational plan.

(3) The safe operational plan must be reviewed by the owner on a regular basis that is approved by the authorised person , and following any accident. A written record must be made of each review, which must include a summary of any conclusions drawn, and any action taken, as a result.

(4) A safe operational plan must be made available—

[1] See Part 31 of the Maritime Rules.

(a) to the authorised person for the purpose of the initial and periodic audits; and

(b) at all reasonable times for inspection by an officer of the Maritime New Zealand.

40F.9 Inspections and audits

(1) The owner of a light craft must arrange for an authorised person to inspect the light craft and carry out an initial audit of the owner's operation.

(2) An authorised person performing an initial audit of a light craft owner's operation required by rule 40F.5(d) must audit the operation to establish that a safe operational plan meeting the requirements of rule 40F.8 is in place and that the operation complies with that plan.

(3) The owner of a light craft must ensure that periodic audits of the owner's operation are carried out by the authorised person to determine maintenance of the safe operational plan and continuing compliance with that plan and the requirements of Appendix 1. At least one such audit must be undertaken each year.

(4) On conclusion of any audit, the authorised person must immediately advise the owner, in writing, of any non-compliance likely to compromise the safety of the operation. The owner must take immediate steps to rectify the non-compliance to the satisfaction of the authorised person.

40F.10 Certificate of compliance

(1) On sighting the light craft's certificate of construction issued under clause 15 of Appendix 1, inspecting the light craft, completion of a satisfactory initial audit of the owner's operation, and confirming the safe operational plan is consistent with that operation and complies with the requirements of rule 40F.8, the authorised person must approve the safe operational plan and notify the Director accordingly.

(2) On receipt of notification of approval of the safe operational plan by the authorised person and upon application in accordance with section 35 of the Maritime Transport Act 1994 by the owner, the Director may issue to the owner of the light craft a certificate of compliance in accordance with section 41 of the Maritime Transport Act 1994.

(3) The certificate of compliance must specify the period of validity of the certificate which must not be more than 2 years from the date of its issue.

40F.11 Recognition of authorised person

(1) Every person, other than an employee of the Authority, who inspects or audits a light craft operation for the purposes of rule 40F.9 must hold a valid certificate of recognition authorising the person to conduct those inspections and audits.

(2) A person is entitled to a certificate of recognition as an authorised person if—

(a) that person makes an application in accordance with section 35 of the Act; and

(b) the Director is satisfied that—

(i) the person has the appropriate technical qualifications and practical experience in the operation of hovercraft to undertake the inspections and audits to be authorised by the certificate; and

(ii) the requirements of section 41 of the Act have been met.

(3) Every certificate of recognition issued must prescribe—

(a) the extent and nature of any inspection or audit that may be undertaken by the authorised person; and

(b) that the certificate is issued in respect of a hovercraft operating in accordance with rule 40F.5; and

(c) the period of validity of the certificate, which in any case must not be more than 5 years from the date of issue; and

(d) any other conditions or requirements that the Director determines are appropriate to the recognition.

Hovercraft other than light craft

40F.12 Design, construction and equipment

The owner of a hovercraft which is not a light craft must ensure that the hovercraft complies with the design, construction and equipment requirements of—

(a) the Code of Safety for High-Speed Craft 2000 (2000 HSC Code) adopted by the Maritime Safety Committee of the International Maritime Organization by resolution MSC.97(73) dated 5 December 2000; or

(b) the regulations for hovercraft[2] of one of the following Classification Societies—

(i) Lloyd's Register of Shipping; or

(ii) DNV GL AS, DNV GL, DNV, or GL or

(iii) Bureau Veritas; or

(c) the regulations for hovercraft of a national administration the certificates of which are recognised by the Director under section 41 of the Act.

40F.13 Survey

(1) The owner of a hovercraft which is not a light craft must ensure that before the hovercraft enters into service it is surveyed and is subsequently maintained in survey by—

(a) for a hovercraft to which rule 40F.12(a) applies, a recognised organisation; or

(b) for a hovercraft to which rule 40F.12(b) applies, the classification society responsible for the regulations referred to in rule 40F.12(b); or

(c) for a hovercraft to which rule 40F.12(c) applies, an authorised surveyor.

(2) The periodicity and nature of surveys in respect of hovercraft to which rule 40F.12(c) applies must be approved by the Director.

40F.14 Certification

(1) On completion of a satisfactory initial survey by a recognised organisation or authorised surveyor that organisation or surveyor must issue to the owner of a hovercraft which is not a light craft a High-Speed Craft Safety Certificate, complying with rule 40F.15, in respect of that hovercraft.

(2) On completion of a satisfactory periodic survey of a hovercraft which is not a light craft by a recognised organisation or authorised surveyor, that organisation or surveyor must re-validate or renew the High-Speed Craft Safety Certificate issued in respect of that hovercraft under paragraph (1).

(3) The owner of a hovercraft which is not a light craft must not permit the hovercraft to be operated—

(a) unless the owner is in possession of a valid High-Speed Craft Safety Certificate issued by a recognised organisation or an authorised surveyor for that hovercraft, as the case may be; and

(b) the owner is in possession of a Permit to Operate High-Speed Craft issued by the Director for that hovercraft.

40F.15 High-Speed Craft Safety Certificate

The High-Speed Craft Safety Certificate issued under rule 40F.14(1) must be either—

(a) a High-Speed Craft Safety Certificate issued in accordance with section 1.8 of the International Code of Safety for High-Speed Craft 2000; or

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[2] See the classification society's High Speed Craft Regulations.

(b) a High-Speed Craft Safety Certificate indicating compliance with the requirements of either rules 40F.12(b) or (c) and in a form approved by the Director.

40F.16 Permit to Operate High-Speed Craft

(1) The Permit to Operate High-Speed Craft issued under rule 40F.14(3)(b) must be either—

(a) a Permit to Operate High-Speed Craft issued in accordance with section 1.9 of the International Code of Safety for High-Speed Craft 2000; or

(b) a Permit to Operate High-Speed Craft certifying compliance with the requirements of sub-rule (2).

(2) The Director may issue a Permit to Operate High-Speed Craft if the Director is satisfied that the following requirements are met:

(a) the owner of the hovercraft exercises strict control over its operation and maintenance by means of a safety management system approved by the Director; and

(b) the owner ensures that only persons who hold a qualification approved by the Director to operate that type of hovercraft on the intended route are employed; and

(c) operational limits are imposed by the recognised organisation or authorised surveyor, as the case may be, that will ensure that the hovercraft operates within its design limitations; and

(d) the hovercraft will at all times be in reasonable proximity to a place of refuge, to enable the craft to have sufficient time to seek refuge when climatic or sea conditions are likely to arise which are outside the permitted operating conditions of the craft; and

(e) adequate communication facilities and appropriate weather forecasts are available within the area of operation; and

(f) rescue facilities appropriate to the type of hovercraft are readily available in the area of operation.

Authorised surveyor

40F.17 Recognition of authorised surveyor

(1) Every person who—

(a) approves the design of a light craft in accordance with rule 40F.7(a); or

(b) issues a certificate of construction for a light craft required by rule 40F.7(b); or

(c) issues a High-Speed Craft Safety Certificate required by rule 40F.13

must hold a valid certificate of recognition as an authorised surveyor.

(2) A person is entitled to a certificate of recognition as an authorised surveyor if—

(a) that person makes an application in accordance with section 35 of the Act; and

(b) the Director is satisfied that—

(i) the person has the appropriate technical qualifications and practical experience in the design and construction of hovercraft to undertake the approvals, testing, inspections and surveys for the purposes of—

(aa) design approval of a light craft in accordance with rule 40F.7(a); or

(bb) issue of a certificate of construction for a light craft as required by rule 40F.7(b); or

(cc) issue of a High-Speed Craft Safety Construction Certificate for a hovercraft as required by rule 40F.13; and

(ii) the requirements of section 41 of the Act have been met.

(3) Every certificate of recognition issued must prescribe—

(a) the extent and nature of any approval, testing, inspection or survey that may be undertaken by the authorised surveyor; and

(b) the certificate that may be issued is either—

  (i) design approval of a light craft in accordance with rule 40F.7(a); or

  (ii) a certificate of construction for a light craft as required by rule 40F.7(b); or

  (iii) a High-Speed Craft Safety Certificate for a hovercraft as required by rule 40F.13; and

(c) the period of validity of the certificate of recognition, which in any case must not be more than 5 years from the date of issue; and

(d) any other conditions or requirements that the Director determines are appropriate to the recognition.

Appendix 1 Light craft requirements

1. General

1.1 Responsibility

It is the responsibility of the designer, manufacturer, or operator, as appropriate, to seek design approval, inspection and testing of the light craft and certification of construction by the authorised surveyor.

1.2 Recognition of foreign light craft

The Director may, in accordance with section 41 of the Act, recognise design approval or the certification of construction of a light craft designed or constructed in a country other than New Zealand provided that approval or certification is issued by an authority acceptable to the Director. Full details of the light craft and its intended operation with certified copies of approvals and certificates must be supplied to the Director.

2. Structural

2.1 Structural strength

(1) The rigid hull must be designed with sufficient longitudinal and torsional strength to withstand, without permanent deformation or progressive failure:

(a) hogging and sagging when floating at the maximum designed weight in waves with amplitude to length ratio of 1:10, the wave height being the maximum for which certification is sought; and

(b) standing on a solid surface at maximum designed weight, with any bottom area bounded by the outer boundary and the longitudinal and lateral centre-lines of the hull bottom unsupported, with no lift power.

(2) Engines, lift fans, propulsive devices, fuel tanks and seats must be securely fastened to structure of sufficient strength, such that they will not break loose under a crash deceleration of 6g. For the purpose of determining the sufficiency of the fastenings and associated structure under this loading the seats are to be assumed to contain an occupant of 75 kg with a centre of gravity 300 mm above the seat pan and fuel tanks are to be assumed to be full.

(3) Strong points, with adequate load diffusion must be provided to enable the craft to be lifted or jacked, or towed while floating and for the securing of any cargo. The designer must specify any loading or angular limitations.

(4) Designers must submit the design envelope of craft operation in terms of maximum weight, speed and wave or obstacle height when seeking design approval from the authorised surveyor. Structural design data must also be submitted to substantiate compliance with subclauses (1), (2) and (3). Such data may be by calculation or the results of relevant full scale testing. All design assumptions must be stated.

2.2 Hydrodynamic design

(1) The underside of the hull is to incorporate a planing surface inclined upwards towards the craft boundary around the periphery.

(2) The upper surface of the hull must, to the maximum extent practical, be designed such that in the event of total loss of lift power at any point in the design envelope over water, and at any permitted yaw angle, there will be no destabilising moment in roll or pitch resulting from water contact.

(3) When floating at maximum weight, the outer structural boundary must be sloping outwards to provide a height above the static water plane of not less than—

(a) for Class I light craft – 50 mm,

(b) for Class II light craft – 75 mm.

2.3 Structural materials

(1) All structural materials must be fire-restricting materials or be treated so as to make them fire-restricting. Any structure immediately adjacent to fuel tanks or containing fuel tanks or electric batteries, must be resistant to fire and absorption of fuel or battery electrolyte.

(2) The materials must be resistant to, or treated so as to make them resistant to, corrosion or damage from salt or fresh water, and to water absorption.

(3) All structural joints must be securely made using appropriate bonding materials or corrosion resistant fastenings or a combination of both.

(4) Appropriate protective treatment must be applied to prevent corrosion due to dissimilar metal contact.

2.4 Skirt material

(1) Material used for the skirt components must include provision to prevent progressive tearing.

(2) Skirt material must be resistant to damage from fuels and oils used in the craft.

(3) In selecting skirt materials due regard must be given to low temperature and ultra-violet radiation effects.

2.5 Skirt design

(1) Joints used in the fabrication and securing of the skirt must be of sufficient strength to prevent progressive failure in the event of skirt damage. Bonded joints must be made with appropriate bonding agents, paying due regard to the skirt material and to the operating environment.

(2) Skirt design must include provision for effective draining of entrapped water.

(3) Designers must take into account the relevant factors of skirt design which influence the craft's resistance to capsize over water.

3. Buoyancy and Stability

3.1 Provision of buoyancy

(1) The craft must be provided with buoyancy such that, when floating in fresh water of mass density of 1000 kg/m^2 at maximum designed weight, it has a 50 percent reserve of intact buoyancy.

(2) Buoyancy may be provided by structural voids or pre-formed low density flotation material. The use of poured-in-place foam plastic is not generally permitted. All buoyancy must be contained within, or securely fastened, to the hull structure. Any foam plastic used must be structurally stable, impervious to water absorption, and resistant to impact damage.

(3) The designer must declare all spaces for which buoyancy is claimed, and the amount claimed for each space.

3.2 Buoyancy distribution

(1) Buoyancy must be evenly distributed over the craft plan-form.

(2) No contribution to intact buoyancy is to be claimed for any space or material above a level which is 75 mm below the lowest point at which water may enter the intact craft when floating in calm water at maximum designed weight.

(3) Structural void contributions to buoyancy are to be bounded by watertight boundaries, and must each be provided with a watertight access panel for inspection and the removal of any accumulated water. Any penetrations of buoyancy void boundaries must be watertight.

3.3 Intact stability

The craft when floating in still water at maximum certified weight must have positive stability. Additionally—

(a) the intact stability of Class I light craft must be such that, with one occupant on board, movement of that occupant to any position on the craft's outer edge will not result in the craft shipping water; and

(b) the intact stability of Class II light craft must be such that no permitted loading condition at maximum weight will result in a flotation attitude at an angle below the horizontal of more than 8° in any direction.

3.4 Damage stability

(1) For the purposes of calculating the damage stability of the craft, designers must assume the following damage conditions:

(a) bottom damage, clear of any watertight division, extending over a rectangular area measuring 0.1L longitudinally by 0.2B transversely and with vertical penetration of 10 cms; and

(b) side damage extending over a length of 0.1L, clear of any transverse watertight division, and vertically for the full depth of the damaged buoyancy space, with penetration of 0.2B into the buoyancy space; and

(c) end damage, clear of any longitudinal watertight division, and vertically for the full depth of the damaged buoyancy space, with penetration of 0.1L into the buoyancy space.

(2) Following any damage condition given in clause 3.4(1) the craft must have sufficient reserve of buoyancy and stability that when floating in still water—

(a) it will support all occupants, and movements of occupants without progressive flooding; or

(b) permit deployment of, and evacuation of all occupants into survival craft without loss of buoyancy or capsize during the period necessary to achieve that objective.

4. Machinery

4.1 Installation

(1) Only engines, fans, propellers and major transmission components for which the equipment manufacturer has provided recommended limitations or acceptable design data are to be installed, and craft manufacturers must ensure that the installation will not result in such limitations or data being exceeded under normal operation.

(2) In the absence of limitations or design data appropriate testing will be required.

(3) All engines or engine frames must be securely fastened to the vehicle structure, using anti-vibration mounts. All mechanical fastenings of engines and engine mounts are to be positively secured.

4.2 Machinery safety

(1) All rotating machinery and intakes must be guarded to prevent personal injury and foreign object damage. No shafting or transmission components are to be in, or pass through, spaces normally occupied when the craft is operating. Assemblies must be designed so as to avoid the possibility of fretting.

(2) Any shafting must be designed so that its first critical (whirl) speed is at least 120 percent of normal maximum operating rpm.

(3) Fans and propellers must be provided with adequate provision to contain debris resulting from disintegration at normal maximum rpm, to the maximum possible extent.

(4) Carburettors of enclosed petrol engines must be fitted with flame arrestors, and provision is to be made to contain any fuel leakages. Air intakes must be filtered, and positioned so as to minimise spray ingestion.

(5) Engine exhausts are to be positioned and shielded so as to prevent damage to the craft's structure or components from heat or hot gases, and to prevent personal injury. Exhaust outlets are to be positioned so as to minimise any gas reingestion into the craft. No component of an engine exhaust system must be within, or discharge into the cushion plenum chamber.

4.3 Engine controls and instrumentation

(1) Means of starting and stopping engines, and of controlling their speed, are to be provided at the craft operator's position. On Class I light craft the control of propulsion engine speed, when an integrated propulsion/fan engine or separate propulsion engines are fitted, must return to idle position if released.

(2) The speed of all engines, and the values of any engine operating parameter subject to limitations must be displayed at the operator's position. Limiting values are to be marked on the instruments. Gauges or warning lights may be used to indicate the limitations.[3]

5. Fuel systems

5.1 Fuel tanks and lines

(1) Fuel storage tanks and pipes are to be positioned so as to minimise the risk of damage or rupture in the event of a collision.

(2) Permanently installed fuel storage tanks must be vented to atmosphere through vents of adequate size with flame screens at their outlets, which should be so positioned as to minimise reingestion of fuel vapour into the craft. Where bladder tanks are installed, they must be securely fastened to their cells, which are to be sealed and also vented.

(3) Any portable fuel tank used must be to a standard acceptable to the authorised surveyor, and must be securely fastened when installed.

(4) All fuel tanks whether permanently installed or portable, and their immediate surrounding structure, are to be of fire-restricting material which is impervious to fuel absorption.

(5) All fuel tanks are to be provided with filler caps capable of being securely fastened and positioned so as to minimise accumulation of spilled fuel.

(6) No fuel tanks, pipes or vents are to pass through or be in any space normally occupied when the craft is in operation.

(7) All fuel and vent lines must be adequately supported, and provided with means to minimise failure through vibration or fatigue. All connections and couplings are to be fuel-tight and positively fastened.

(8) Any fuel pipe subject to a pressure head from the tank must be provided with a cock or valve as close as possible to the fuel tank and operable from the craft operator's position, such that fuel flow from the tank may be stopped. This cock or valve must be outside any engine compartment.

(9) The craft's operator must be able to visibly determine the contents of each permanently installed tank from the normal operating position, and to readily determine the contents of a portable tank.

(10) In craft fitted with enclosed engines, no fuel tank is to be installed within the engine enclosure. Lines carrying fuel within that enclosure must be of stainless steel.

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[3] Gauges have the advantage of indicating trends.

(11) All metallic components and piping must be grounded, and bonded where appropriate, to prevent accumulation of static charge.

(12) Fuel and fuel systems used for the purpose of trimming the craft must also comply with the appropriate requirements of this clause.

6. Electrical Systems

6.1 General

(1) The electrical systems must comply with AS/NZS 3004.2 *Electrical installations – Marinas and Boats*.

(2) The owner of a ship which is a post- 27 May 2004 or a ship which undergoes major alteration of its electrical systems must ensure that the information set out in subrule (3) is provided in a clear and legible form to and approved by a surveyor recognised by the Director for that purpose before the ship is built, or the electrical systems are altered or modified, as the case may be.

(3) The diagrams and information required by subrule (1) are—

(a) schematic diagrams of the main and any emergency power and lighting systems which include—

(i) a description of the type of electrical systems of supply installed; and

(ii) ratings of generators, transformers, batteries, charging sources, inverters, semi-conductor converters; and

(iii) all feeders connected to each switchboard; and

(iv) insulation type, size, and current loadings of feeder and final sub-circuit cables; and

(v) make, protection characteristic curve, prospective short circuit, and over current ratings of all circuit breakers and fuses; and

(b) simplified diagrams of generation circuits, battery charging, interconnector circuits, and feeder circuits; and

(c) arrangement and location plans of main and emergency switchboards plus any distribution boards; and

(d) plans showing the location of the main and emergency sources of power, radio battery, inverters, and battery chargers; and

(e) electrical load calculations used to determine the capacities of main and emergency generators and battery banks; and

(f) circuit diagram(s) of electrically powered bilge pumps plus bilge level alarms and pump monitoring systems; and

(g) circuit diagrams of electrically powered navigation lights, controls, and monitoring; and

(h) volt drop calculations of each of the following:

(i) main power feeder circuit; and

(ii) navigation light circuit; and

(iii) bilge pump circuit; and

(iv) vhf radio power supply circuit.

6.2 Batteries

(1) Electric batteries are to be installed and secured in compartments treated to be resistant to corrosion from battery electrolyte. Such compartments are to be as remote as practical from any fuel system components and from spaces normally occupied when the craft is operating. Where practicable batteries are to be contained in a box impervious to electrolyte.

(2) Any battery capable of being charged while the craft is operating must be vented to atmosphere.

(3) Class II light craft must have sufficient battery capacity to power any installed fire detection equipment, navigation and instrument lighting, emergency lighting and any electrically powered controls for a minimum of 6 hours.

6.3 Electric cables

(1) All electric cables are to be installed such that connections are not less than 100 mm above the bottom of the space containing the connections. Cables passing through spaces normally occupied when the craft is operating are to be installed so as to minimise the risk of damage by occupants and to prevent personal injury.

(2) All electrical cables must be covered with insulation impervious to water absorption. Connections must be protected against spray and dissimilar metal corrosion.

6.4 Safety

(1) Any electrical component installed in an enclosed engine space, or a space where flammable vapours may accumulate, must be of a spark-proof design acceptable to the authorised surveyor.

(2) At the normal operating position, the operator of the craft is to be provided with means of disconnecting all installed electrical power supply from the craft's circuits.

(3) Any electrical generator or alternator supplying power to a craft's electrical systems in normal operation must be provided with power failure indication and a voltmeter at the operator's position.

6.5 Navigation lights

(1) All hovercraft are to be fitted with a yellow flashing light, visible all round the craft for a distance of 2 nautical miles, adjusted to flash at 120 or more flashes per minute. Power supply to this light is to be controlled from the operator's position.

(2) Craft intending to operate at night must be fitted with navigation lights complying with Part 22 of the maritime rules, and adequate instrument lighting.

7. Fire safety

7.1 Engine enclosures

(1) Any space which encloses an engine must:

(a) be constructed of fire-restricting material or treated to make it fire-restricting;

(b) be provided with sensors giving indication at the operator's position in the event of a fire;

(c) be provided with a fire extinguishing flooding system operable from outside the space, or with at least one breakable access through which fire extinguishing medium may be discharged;

(d) for engines using petrol as fuel:

(i) be provided with forced ventilation such that ventilation is provided for a minimum of 30 seconds before the engine is capable of being started; and

(ii) be provided with vapour detectors giving warning at the operator's position of any dangerous accumulation of vapour;

(e) be insulated so that the outside of any boundary common with space which may be occupied when the craft is operating will not cause burns to persons coming into contact with it in the event of a fire within the space.

(2) Any penetrations of the boundaries of an enclosed engine space which connect with other spaces within the craft must be of at least fire-restricting material.

7.2 Furnishings

All furnishings, coverings, fabric and trim shall be at least fire-restricting materials.

7.3 Fire extinguishers

Portable fire extinguishers, of such size, type and number as may be required by the authorised surveyor, having regard to the craft size and layout, must be provided and securely fastened in readily accessible stowages.

8. Controls

8.1 Directional controls

(1) The craft's operator must be provided with means of directional control at the operating position. The control system is to be installed such that, over the full range of movement, the force required to be applied by the operator is reasonably constant.

(2) Manually operated control systems must be designed with a safety margin, acceptable to the authorised surveyor, against the following load applied with the maximum lever arm possible

Foot controls – 60 kgs

Stick lever controls – 50 kgs fore and aft and 30 kgs lateral

Wheel controls – 50 kgs fore and aft and 20 D kgs.m where D = diameter(m)

Handlebar controls – 50 kgs fore and aft and 25 kgs in rotation.

(3) The range of movement required by the operator to provide full deflection of the control surfaces must be readily attainable without the need for excessive seat adjustment or excessive body movement.

(4) Control surfaces must be securely fastened to the craft with positively secured fastenings. The surfaces and their mountings are to be designed to withstand any forces acting upon them at any deflection at the maximum designed craft speed, without distortion.

8.2 Other controls

(1) The craft's operator is to be provided with controls at the operator's position for:

(a) starting, stopping and regulating the speed of all engines

(b) shutting off the supply of fuel from all installed fuel tanks

(c) starting any engine space ventilation blower

(d) activating any fixed fire extinguishing system

(e) disconnecting all electrical power from vehicle circuits

(f) switching on and off any installed lighting.

(2) The throttle control of any engine used for propulsion of a Class I light craft or any integrated propulsion/fan engine must be arranged so as to close to the idle position when released.

9. Accommodation

9.1 Exits

(1) Class II light craft with enclosed accommodation must be provided with either a fully opening enclosure or at least two means of exit. Means for the rapid exit of persons in the event of an overturn must be provided.

(2) In designs employing exit doors, at least one exit must be not less than 750 mm in width, and when open is to provide a clear unobstructed minimum height immediately outside of not less than 1.75 m. All exits must either be capable of being jettisoned or designed to hinge outwards, and must be provided with means of securing them closed. Hinged exits are to have means of securing them in the open position.

(3) The second exit may be designated as an emergency exit. It must be as remote as practical from the normal exit and at least 660 mm in width and 660 mm in height.

(4) In craft which are intended to be operated in periods of darkness, all exits must be provided with adequate means of illumination.

9.2 Seats

(1) Securely fastened seats must be provided for the total number of persons the craft is designed to carry.

(2) The seat for the operator must be provided with fore-and-aft movement and with a—

(a) lap and full shoulder safety belt in a Class II light craft; or

(b) lap safety belt in a Class I light craft.

9.3 Windows

(1) Any windows must be made of material which will not break into dangerous fragments if fractured. The material must also continue in service to provide clear visibility for the operator.

(2) In Class II light craft clear visibility from the operator's position must be provided and maintained over a horizontal arc of at least 60° either side of the longitudinal axis.

10. Operational equipment

10.1 Bilge pump

An effective bilge pump capable of pumping not less than 15 litres per minute must be provided. The pump must be securely stowed in a readily accessible position if it is not permanently installed[4].

10.2 Miscellaneous equipment

(1) An anchor and rope, acceptable to the authorised surveyor, must be provided and these must be securely stowed.

(2) Class I light craft must be provided with 2 paddles which must be securely stowed and readily available.

10.3 Lifesaving appliances

(1) A non-SOLAS lifejacket with a buoyancy of at least 71 Newtons that meets the requirements of rule 42A.19 must be—

(a) provided for every person on board the craft; and

(b) stowed in a readily accessible location when it is not in use.

(2) Class II light craft which proceed beyond enclosed water limits must be provided with an inflatable liferaft complying with rule 42A.12 which is capable of carrying the total number of persons on board. The inflatable liferaft must be securely stowed and capable of being readily launched to the satisfaction of the authorised surveyor.

11. Design approval

11.1 Approval of design

The designer or manufacturer of a light craft must have the design information required by clause 11.2 of this Appendix approved by an authorised surveyor.

11.2 Design information to be supplied

An authorised surveyor may approve the design of a light craft if the surveyor has received the following information and considers the design complies with applicable requirements of this Appendix:

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[4] The bilge pump may be a hand pump or mechanically or electrically driven.

(a) craft dimensions, estimated empty weight, number of persons or payload craft designed to carry, designed maximum weight;

(b) principal materials of construction;

(c) weight, maximum speed and power of each engine, as provided by the engine manufacturer, together with the manufacturer's engine model designation;

(d) manufacturer's data relating to lift fans and propellers or propelled devices, including any speed limitations;

(e) type, amount and distribution of buoyancy;

(f) craft's designed maximum speed, wave height and windspeed;

(g) general arrangement drawing and structural detail drawings;

(h) electrical details required by clause 6(1) of this Appendix;

(i) such additional relevant information the authorised surveyor may require.

11.3 Approval of information and plans/specifications of prototype

Where design information and plans are submitted for the prototype of a series of craft the authorised surveyor may approve the design information and plans or specifications for use by the manufacturer of subsequent craft provided:

(a) the design information and plans or specifications are in sufficient detail that compliance with all applicable requirements of this Appendix can be readily established;

(b) the plans or specifications contain sufficient instruction relating to materials, fastenings, equipment and components that the craft may be constructed and assembled with adequate safety; and

(c) a prototype craft has been constructed from the plans or specifications, the prototype construction has been witnessed by the authorised surveyor and the prototype craft has been subject to tests and trials in accordance with clause 13 of this Appendix, to the satisfaction of the authorised surveyor.

12. Construction

(1) All fabrication of the hull and skirt of a light craft must be carried out by or under the supervision of persons possessing appropriate knowledge and skill relating to the materials and fabrication methods.

(2) The manufacturer must make available any test reports concerning materials, welds and other joints made during fabrication of the light craft that the authorised surveyor may require and provide appropriate access to the light craft for its inspection by the authorised surveyor during its construction.

(3) Due regard must be paid to recommendations of material manufacturers regarding storage, atmospheric control and material preparation during fabrication.

(4) Any special recommendations or instructions of the manufacturer are to be complied with when installing equipment in the craft.

(5) The authorised surveyor must inspect a light craft during its construction to the extent necessary to ensure its compliance with the design approval required by clause 11.1 of this Appendix.

13 Testing and trials

13.1 Testing

(1) Every craft must be subjected to a watertight buoyancy integrity test as soon as possible after completion. Depending upon the craft design and means of providing buoyancy, this check must be carried out by either a pressure test of each buoyancy void, or by a flotation test at maximum design weight for 12 hours. Flotation tests must be carried out with no skirts fitted.

(2) If the buoyancy test required by clause 13.1(1) is carried out by a pressure test, each buoyancy void must be subjected to a pressure test. The test medium is to be air or an inert gas, using a pressure head of water of not less than 1.5 times the theoretical draught of the void when the craft is floating in water at maximum design weight. The test will be satisfactory if the pressure has not decreased by more than 10 percent after 30 minutes.

(3) If the buoyancy test required by clause 13.1(1) is carried out by a flotation test, it may be carried out by either—

(a) observation of the waterline on each side of the bow and each side of the stern at the start and end of the flotation test; or

(b) weighing the craft before and after the flotation test, with the same weighing equipment; or

(c) inspection of each buoyancy void immediately after the flotation test.

(4) Testing is considered satisfactory—

(a) if tested in accordance with 13.1(3)(a), the flotation draft at any observed point has not increased by more than 10 percent; and

(b) if tested in accordance with 13.1(3)(b), the weight has not increased by more than 10 percent; and

(c) if tested in accordance with 13.1(3)(c), the individual buoyancy voids have accumulated less than 4 litres of water.

(5) Any structural void intended to contain fuel or a fuel bladder must be subjected to a pressure test. The test medium must be air or an inert gas, using a pressure head of water of not less than 1.5 times the maximum depth of the space. The test will be satisfactory if the pressure has not decreased by more than 10 percent after 30 minutes.

(6) Upon completion of the craft the electrical system must be inspected and tested in accordance with the requirements of clause 6 of this Appendix.

(7) Each installed engine is to be operated and adjusted to ensure that all operating parameters are within the manufacturer's recommended limits.

13.2 Craft trials

(1) The first craft of a new type of light craft must be subjected to operational trials during which such data is to be gathered as may be necessary to establish that all installed equipment and machinery is maintained within recommended limitations during normal operation of the craft in all design conditions.

(2) Handling and manoeuvring trials must establish any limitations, when operating in any design condition, beyond which operation is unsafe in respect of weight, vertical and longitudinal centre of gravity position, speed, windspeed, wave height and yaw angle.

(3) The trials must examine the craft's behaviour and handling qualities during and subsequent to the failure of each engine separately when the craft is operating in all conditions for which it is designed. The results of such trials must be used if appropriate to modify any limitations established as a result of the trials conducted in accordance with subclause 13.2(2).

(4) For craft intended to be operated in periods of darkness, an assessment must be made of the adequacy of all lighting while operating in darkness, paying due regard to glare and reflection which may distract the operator.

13.3 Documented reports

(1) Documented reports and results of all trials must be made available to the authorised surveyor. Provision must be made for the authorised surveyor to participate in or witness any trials.

(2) Documented reports and results of trials of any craft must be maintained by the manufacturer and authorised surveyor and must be made available on request by the Director.

14. Technical information

14.1 Manuals

(1) The manufacturer of any craft must ensure a manual or handbook is produced containing sufficient information to enable the owner to service, maintain and repair the craft in order to keep it in safe operational condition. The manual must include relevant information provided by manufacturers of engines and any other components.

(2) The manual or handbook must provide sufficient guidance and instruction to enable the operator to observe handling and control precautions, and must contain specific information regarding at least:

(a) any craft or equipment operating limitations, as established during trials;

(b) handling precautions to be observed in the event of an engine failure;

(c) actions to be taken in the event of a fire;

(d) any other emergency or failure precautions that have been established.

(3) Where plans are intended to be sold for the construction of a craft by other than a craft manufacturer, the designer must ensure a manual or handbook is provided complying with the above requirements.

15. Certification

15.1 Certification of light craft

(1) Upon completion of design approval required by clause 11, satisfactory inspection of construction required by clause 12, satisfactory testing and trials required by clause 13 and compliance with other applicable requirements of this Appendix, the authorised surveyor may issue a certificate of construction for the light craft within such operating limits as may have been established.

(2) A light craft which commenced construction on or before the date of entry into force of this Part will be considered satisfactory for the purposes of subclause 15.1(1) if it is in a good state of repair and built to standards appropriate to the materials of construction and its intended use, and is considered fit for its intended purpose by the authorised surveyor issuing the certificate of construction.

(3) For identical repeat models of a prototype light craft which is already in possession of a certificate of construction and the same operating limits, the authorised surveyor may issue a certificate of construction following satisfactory inspection of the construction and compliance with other applicable requirements of this Appendix without design approval required by clause 11 and the testing and trials required by clause 13.

(4) Any certificate of construction issued under subclauses 15.1(1), 15.1(2) and 15.1(3) must be in a form approved by the Director.

16. Safety equipment

A light craft must be provided with—

(a) an Order of St John regular First Aid Kit in a waterproof container; or

(b) a Red Cross First Aid Kit in a waterproof container; or

(c) a suitable equivalent in a waterproof container.