

Recreational Craft Directive RYA Compliance Guide

Appendix 7



Technical Documentation

General

The Technical Documentation is the key documentation required by the Directive. If challenged the builder must be able to show that a boat to which the documentation refers has been constructed to, and thereby complies with the Essential Requirements.

Details required in the Technical Documentation are specified in the RSG Section H.

Where Standards have been used it is sufficient just to reference the Standard if this has been followed completely. If, as will frequently be the case, only partial compliance is relevant, this must be detailed.

Where compliance is by direct application of an Essential Requirement the Documentation will need to demonstrate the method of determining compliance and give reference to the specifications and include all necessary data supporting conformity.

The Technical Documentation shall be retained by the builder for at least ten years from the date of completion of the last boat of the model.

Check List

The following table can be used as a check list to ensure the Technical Documentation covers all appropriate aspects of the Essential Requirements.

The first column gives the reference number of the Essential Requirement.

The second column contains the heading or a précis of the heading of the Requirement.

The final column is for the builder to enter the Name and Number of the Standard(s) that have been used to fulfil the requirement, or reference to the specifications in relation to which conformity is declared. The latter will most likely be a reference to the relevant section of the Technical Documentation where conformity to the particular Essential Requirement is documented. Any Essential Requirement not relevant to the boat type can be deleted, marked 'Not Applicable' or explained by some equivalent comment.

The Standard EN10087 'Small Craft - Hull Identification - Coding System' has been entered against 2.1 Hull Identification as this Standard must be used.

Examples

The pages following the check list give brief details of the Essential Requirements, examples of what might be included in typical Technical Documentation and, where appropriate, a short explanation of the contents.

Where reference is made to the “manufacturer”, in all cases this should be taken to refer to the “builder”, unless otherwise stated.

TECHNICAL DOCUMENTATION - CHECK LIST

Technical Documentation for

Model No: **Design Category:**

REF	ESSENTIAL REQUIREMENTS	STANDARD OR DOCUMENTATION REFERENCE
1	Boat Design Categories	
2	General Requirements	
2.1	Hull Identification (HIN)	EN 10087 'Small Craft - Hull Identification - Coding System'
2.2	Builder's Plate	
2.3	Protection from falling overboard	
2.4	Visibility from main steering position	
2.5	Owners manual	
3	Integrity and Structural Requirements	
3.1	Structure	
3.2	Stability and Freeboard	
3.3	Buoyancy and flotation	
3.4	Openings in hull deck and superstructure	
3.5	Flooding	
3.6	Manufacturer's recommended load	
3.7	Liferaft stowage	
3.8	Escape	
3.9	Anchoring, mooring and towing	

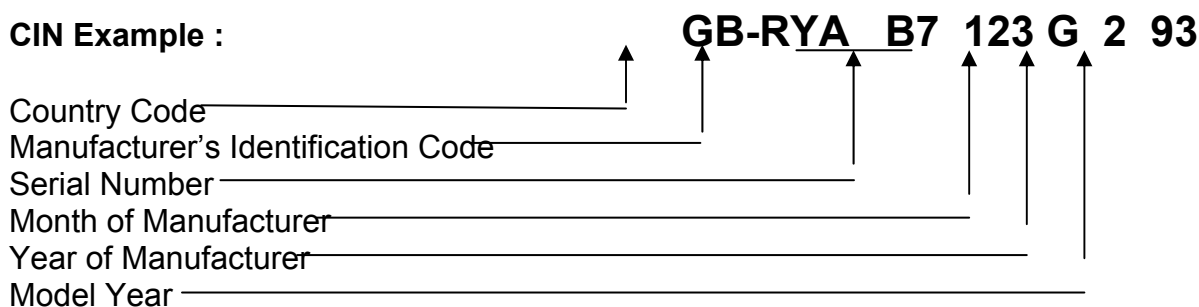
4	Handling Characteristics	
5	Installation Requirements	
5.1	Engines and Engine spaces	
5.1.1	Inboard engine	
5.1.2	Ventilation	
5.1.3	Exposed parts	
5.1.4	Outboard Engine starting	
5.2	Fuel System	
5.2.1.	Fuel Tanks	
5.3	Electrical Systems	
5.4	Steering System	
5.4.1	General	
5.4.2	Emergency arrangements	
5.5	Gas System	
5.6	Fire Protection	
5.6.1	General	
5.6.2	Fire-fighting Equipment	
5.7	Navigation Lights	
5.8	Discharge Prevention	
X	Associated Directives	

Examples

The following pages give brief details of the Essential Requirements, examples of what might be included in typical Technical Documentation and, where appropriate, a short explanation of the contents.

Section	Essential Requirement	Example of information to be included
2.1	<p>Hull Identification Each craft shall be marked with a hull identification number including the following information:</p> <ul style="list-style-type: none"> - manufacturer's code - country of manufacture - unique serial number - year of production - model year 	<p>Give actual CIN and state where this is displayed on the hull.</p> <p>ISO 10087 must be used</p>

CIN Example :



For further information see ISO 10087. This Standard has evolved from the American Standard and is at variance with the Essential Requirements as follows :-

- It states that 'the HIN shall be affixed during the construction of the hull', implying that this cannot be undertaken subsequently, which is not the case. The CIN may be applied to an existing boat by the responsible person.
- It identifies the month of production which is not listed. However in order to have a uniform approach it should be included.
- It includes a model year to allow boats completed in one year for sale in the next.

Section	Essential Requirement	Example of information to be included
2.2	<p>Builder's plate Each craft shall carry a permanently affixed plate mounted separately from the boat hull identification number, containing the following information:</p> <ul style="list-style-type: none"> • Manufacturer's name • CE marking • Boat Design Category [RSG Section E 1] • Manufacturer's maximum recommended load [RSG Section E 3.6] • Number of persons recommended by the manufacturer for which the boat was designed to carry when under way. 	Give an illustration or photograph of the actual Builder's plate and state where this is displayed on the hull.

The RSG Guidelines give a good design example of a typical Builder's plate.

Section	Essential Requirement	Example of information to be included
2.3	<p>Protection from falling overboard and means of re-boarding Depending on the Design Category, craft shall be designed to minimise the risks of falling overboard and to facilitate re-boarding.</p>	Materials, size and position of all rails, stanchions etc. This is best illustrated by diagram or photographs.

As an alternative to ISO 15085, compliance with ORC Special Regulations may be used for direct Essential Requirement compliance confirmation.

Section	Essential Requirement	Example of information to be included
2.4	<p>Visibility from the main steering position</p> <p>For motor boats, the main steering position shall give the operator, under normal conditions of use (speed and load), good all-round visibility.</p>	<p>Show, by diagram or photographs, the fields of view from the helmsman's position. Include details of any windscreen supports, masts etc. that might be in view.</p>

A practical interpretation of the Essential Requirement would be that sailing boats, even if fitted with an auxiliary engine, and/or tiller steered boats are exempt from the Requirement provided their maximum speed under engine is less than 10 knots.

Section	Essential Requirement	Example of information to be included
2.5	<p>Owner's manual</p> <p>Each craft shall be provided with an owner's manual in the official Community language or languages, which may be determined by the Member State in which it is marketed in accordance with the Treaty. This manual should draw particular attention to risks of fire and flooding and shall contain the information listed in RSG Section E 2.2, 3.6 and 4 as well as the unladen weight of the craft in kilograms.</p>	

ISO 10240, completed before full implementation of the RCD, specifies requirements that are difficult and expensive to fulfil. Accordingly this is one Essential Requirement that may be best satisfied by direct application and, in this respect, the RSG Guideline is helpful.

This Guideline makes the following recommendations:-

The information in the Owners' Manual may be limited to the safe operation of the craft, with due consideration for the environment. The Owner's Manual does not have to include technical servicing information, such as wiring diagrams, fuel piping, etc., which may be included in a document, separate from the Owner's Manual. This technical service document need not be translated.

Section	Essential Requirement	Example of information to be included
3.1	<p>Structure The choice and combination of materials and its construction shall ensure that the craft is strong enough in all respects. Special attention shall be paid to the Design Category according to Section 1, and the manufacturer's maximum recommended load in accordance with RSG Section E 3.6.</p>	<p>Where an existing Classification Society type rule is applied, copies of the reports, approved drawings and verification of build to these should form part of the Technical Documentation.</p> <p>Where assessment of scantlings from first principles is used, the source of all measured or assumed pressures including test data, all calculations, material properties, drawings and verification of build to these should form part of the Technical Documentation.</p> <p>Where satisfactory compliance is to be demonstrated by means of empirical data i.e. past acceptability, details of voyages undertaken, the environmental conditions and verification that these apply to the same design of boat and Design Category should be included.</p>

Section	Essential Requirement	Example of information to be included
3.2	<p>Stability and freeboard The craft shall have sufficient stability and freeboard considering its Design Category according to RSG Section E 1 and the manufacturer's maximum recommended load according to RSG Section E 3.6.</p>	<p>Test Reports against ISO 12217 or 6185 should be included.</p>
3.3	<p>Buoyancy and flotation The craft shall be constructed to ensure that it has buoyancy characteristics appropriate to its Design Category according to RSG Section E 1, and the manufacturer's maximum recommended</p>	

	<p>load according to RSG Section E 3.6. All habitable multihull craft shall be so designed as to have sufficient buoyancy to remain afloat in the inverted position.</p> <p>Boats of less than 6 metres in length are susceptible to swamping when used in their Design Category shall be provided with appropriate means of flotation in the swamped condition. Recommended load in accordance with RSG Section E 3.6.</p>	
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Section	Essential Requirement	Example of information to be included
3.4	<p>Openings in hull, deck and superstructure Openings in hull, deck(s) and superstructure shall not impair the structural integrity of the craft or its weather-tight integrity when closed.</p> <p>Windows, port lights, doors and hatch-covers shall withstand the water pressure likely to be encountered in their specific position, as well as point loads applied by the weight of persons moving on deck.</p> <p>Through hull fittings designed to allow water passage into the hull or out of the hull, below the waterline corresponding to the manufacturer's maximum recommended load according to RSG Section E 3.6, shall be fitted with shutoff means which shall be readily accessible.</p>	<p>Use the diagram in the Standard as a basis to illustrate the position of all openings.</p> <p>Where hatches, doors etc. are already CE marked then include a statement to this effect.</p> <p>Non-CE marked closures can be tested to the standard and photographs of the tests and a statement of conformity included.</p>

Section	Essential Requirement	Example of information to be included
3.5	<p>Flooding All craft shall be designed so as to minimise the risk of sinking.</p> <p>Particular attention should be paid where appropriate to:</p>	<p>Include drawings illustrating the position and size of cockpits and wells showing drains. Also the position and size of ventilation fittings.</p>

	<ul style="list-style-type: none"> - Cockpits and wells, which should be self-draining or have other means of keeping water out of the boat interior - Ventilation fittings - Removal of water by pumps or other means 	Detail the capacity and positions of all fitted pumps.
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Alternatives include ORC Special Regulations and MCA Codes of Practice.

Section	Essential Requirement	Example of information to be included
3.6	<p>Manufacturer's maximum recommended load The manufacturer's maximum recommended load [fuel, water, provisions, miscellaneous equipment and people (in kilograms)] for which the boat was designed, as marked on the builder's plate, shall be determined according to the Design Category [RSG Section E 1], stability and freeboard [RSG Section E 3.2] and buoyancy and flotation [RSG Section E 3.3].</p>	State the maximum recommended load as mass in kilograms.

See the note on the Manufacturer's maximum recommended load in the Compliance Procedures part of this pack. The Commission's comments to RCD Annex 1 – 3.6 confirm that permanently installed tanks (fuel and water) are to be assumed full and are therefore not included in the maximum recommended load.

Section	Essential Requirement	Example of information to be included
3.7	<p>Liferaft stowage All craft of categories A and B, and craft of categories C and D longer than six metres shall be provided with one or more stowage points for a liferaft (liferafts) large enough to hold the number of persons the boat was designed to carry as recommended by</p>	If required, identify the space or surface where liferaft(s) should stowed.

	the manufacturer. This (these) stowage point(s) shall be readily accessible at all times.	
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Section	Essential Requirement	Example of information to be included
3.8	<p>Escape All habitable multihull craft over 12 metres long shall be provided with viable means of escape in the event of inversion.</p> <p>All habitable craft shall be provided with viable means of escape in the event of fire.</p>	Where required show the routes of escape by means of drawings.

Section	Essential Requirement	Example of information to be included
3.9	<p>Anchoring, mooring and towing All craft, taking into account their Design Category and their characteristics shall be fitted with one or more strong points or other means capable of safely accepting anchoring, mooring and towing loads.</p>	Specify the location and type of fitting by means of drawings. Use past data to demonstrate strength compliance i.e. give details of previous use as for anchoring etc.

The strength of point may be determined by working back from recommended anchor chain/warp breaking strain, towing loads, etc.

Section	Essential Requirement	Example of information to be included
4	<p>Handling Characteristics The manufacturer shall ensure that the handling characteristics of the craft are satisfactory with the most powerful engine for which the boat is designed and constructed. For all recreational marine engines, the maximum rated engine power shall be declared in the owner's manual in accordance with the harmonised standard.</p>	<p>Document 'sea trials', covering high and low speed steering, control astern and handling under sail.</p> <p>Also consider changes that may occur in light and loaded conditions if likely to affect handling and specify these conditions.</p>

Section	Essential Requirement	Example of information to be included
5.1	Engines and Engine Spaces	
5.1.1	<p>Inboard engine All inboard mounted engines shall be placed within an enclosure separated from living quarters and installed so as to minimise the risk of fires or spread of fires as well as hazards from toxic fumes, heat, noise or vibrations in the living quarters.</p> <p>Engine parts and accessories that require frequent inspection and/or servicing shall be readily accessible.</p> <p>The insulating materials inside engine spaces shall all be non-combustible.</p>	<p>Show the position of any inboard engine and that they are separated from living quarters etc.</p> <p>Insulating material may be checked by test and the results included in the Technical Documentation.</p>

Insulating materials with oxygen index (O_1) of 21 or more to ISO 4589 meet this requirement. This only applies to the insulation and not the boat structure.

Section	Essential Requirement	Example of information to be included
5.1.2	<p>Ventilation The engine compartment shall be ventilated. The dangerous ingress of water into the engine compartment through all inlets must be prevented.</p>	<p>Show the position and size of fixed ventilation (holes) to the compartment by drawing or photograph. Included details of any fans.</p>
5.1.3	<p>Exposed Parts Unless the engine is protected by a cover or its own enclosure, exposed moving or hot parts of the engine that could cause personal injury shall be effectively shielded.</p>	<p>Show, by drawing or photograph, the position and size of any cover or shield.</p>

Section	Essential Requirement	Example of information to be included
5.1.4	<p>Outboard Engines Starting All boats with outboard engines shall have a device to prevent starting the engine in gear, except :</p> <p>a) when the engine produces less than 500 Newton's (N) of static thrust</p> <p>b) when the engine has a throttle limiting device to limit thrust to 500N at the time of starting the engine.</p>	<p>Outboards engines are normally supplied with this as a built in facility.</p>

Section	Essential Requirement	Example of information to be included
5.2	<p>Fuel system</p>	
5.2.1.	<p>General The filling, storage, venting and fuel-supply arrangements and installations shall be designed and installed so as to minimize the risk of fire and explosion.</p>	<p>The specification, materials, location mounting, jointing etc. and operation of fuel tanks, lines unions, filters etc. shall be detailed.</p>
5.2.2	<p>Fuel tanks Fuel tanks, lines and hoses shall be secured and separated or protected from any source of significant heat. The material the tanks are made of and their method of construction shall be according to their capacity and the type of fuel. All tank spaces shall be ventilated.</p> <p>Liquid fuel with a flash point below 55°C shall be kept in tanks, which do not form part of the hull and are:</p> <p>(a) insulated from the engine compartment and from all other source of ignition,</p>	

	<p>(b) separated from living quarters.</p> <p>Liquid fuel with a flash point equal to or above 55°C may be kept in tanks that are integral with the hull.</p>	
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Section	Essential Requirement	Example of information to be included
5.3	<p>Electrical system Electrical systems shall be designed and installed so as to ensure proper operation of the craft under normal conditions of use and shall be such as to minimise risk of fire and electric shock.</p> <p>Attention shall be paid to the provision of overload and short-circuit protection of all circuits, except engine starting circuits, supplied from batteries.</p> <p>Ventilation shall be provided to prevent the accumulation of gases which might be emitted from batteries. Batteries shall be firmly secured and protected from ingress of water.</p>	<p>The specification, materials, location mounting, jointing, capacity, power, voltage etc. and the operation of electrical fuse boxes, generators, isolating switches, cables, cable jointing, fittings etc. whether AC or DC shall be detailed together with circuit diagrams giving fuse values etc.</p>

Section	Essential Requirement	Example of information to be included
5.4 5.4.1	<p>Steering system</p> <p>General Steering systems shall be designed, constructed and installed in order to allow the transmission of steering loads under foreseeable operating conditions.</p> <p>Emergency arrangements Sailboat and single-engine inboard powered motor boats with remote-controlled rudder steering systems shall be provided with emergency means of steering the craft at reduced speed.</p>	<p>The specification, materials, location, mounting etc. and operation of steering systems shall be detailed together with similar details of emergency arrangements. The details should include data, calculated or empirical, to demonstrate that the steering systems are capable of accepting the expected loads.</p>

Section	Essential Requirement	Example of information to be included
5.5	<p>Gas System</p> <p>Gas systems for domestic use shall be of the vapor-withdrawal type and shall be designed and installed so as to avoid leaks and the risk of explosion and be capable of being tested for leaks. Materials and components shall be suitable for the specific gas used to withstand the stresses and exposures found in the marine environment.</p> <p>Each appliance shall be equipped with a flame failure device effective on all burners. Each gas-consuming appliance must be supplied by a separate branch of the distribution system, and each appliance must be controlled by a separate closing device. Adequate ventilation must be provided to prevent hazards from leaks and products of combustion.</p> <p>All craft with a permanently installed gas system shall be fitted with an</p>	<p>The specification, materials, location, mounting, jointing, capacity etc. and the operation of gas systems including, isolating taps, pipes, pipe jointing, fittings, appliances etc. shall be detailed together with schematic diagrams of the installation.</p> <p>Details or photographs of adequate ventilation should be included.</p> <p>Photographs of separate gas cylinder storage areas showing the drains would be helpful.</p> <p>Details of empirical or test data in support of compliance are required for permanent installations.</p>

	<p>enclosure to contain all gas cylinders. The enclosure shall be separated from the living quarters, accessible only from outside and ventilated to the outside so that any escaping gas drains overboard. Any permanent gas system shall be tested after installation.</p>	
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Section	Essential Requirement	Example of information to be included
5.6	Fire protection	
5.6.1	General The type of equipment installed and the layout of the craft shall take account of the risk and spread of fire. Special attention shall be paid to the surroundings of open flame devices, hot areas or engines and auxiliary machines, oil and fuel overflows, uncovered oil and fuel pipes and avoiding electrical wiring above hot areas of machines.	Details shall be included of fire protection coverings and/or shield surrounding open flame devices, hot areas or engines and auxiliary machines, oil and fuel overflows, uncovered oil and fuel pipes and avoiding electrical wiring above hot areas of machines. This may be undertaken by photographs together with material specification.
5.6.2	Fire-fighting Equipment Craft shall be supplied with fire-fighting equipment appropriate to the fire hazard. Petrol engine enclosures shall be protected by a fire extinguishing system that avoids the need to open the enclosure in the event of fire. Where fitted, portable fire extinguishers shall be readily accessible and one shall be so positioned that it can easily be reached from the main steering position of the craft.	The specification, type, location, mounting, capacity etc. and the operation of fire protection and fire fighting equipment including, pipes, pipe jointing, fittings, appliances, extinguishers etc. shall be detailed together with schematic diagrams of any fixed installation.

Section	Essential Requirement	Example of information to be included
5.7	Navigation lights Where navigation lights are fitted, they shall comply with the 1972 Colreg or CEVNI regulations, as appropriate.	Lights should be marked with compliance information and details of this may be included in the Technical Documentation.

Section	Essential Requirement	Example of information to be included
5.8	Discharge prevention Craft shall be constructed so as to prevent the accidental discharge of	Photographs of accidental discharge prevention devices should be included together with details of holding tanks or

	<p>pollutants (oil, fuel, etc) overboard.</p> <p>Craft fitted with toilets shall have either:</p> <p>(a) holding tanks; or</p> <p>(b) provision to fit holding tanks on a temporary basis in areas of use where the discharge of human waste is restricted.</p> <p>In addition any through-the-hull pipes for human waste shall be fitted with valves which are capable of being sealed shut*.</p>	<p>areas for holding tanks where a toilet is fitted.</p>
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* "Sealed shut" means that the valve cannot be opened to discharge overboard without breaking a seal or unlocking a mechanical device.

ASSOCIATED DIRECTIVES PRO-FORMA SCHEDULE

Section	Essential Requirement	Example of information to be included
X	Associated Directives Electromagnetic Compatibility Electrical Appliances Gas Appliances etc. <i>Machinery Directive (Outboards)</i>	Complete a declaration of the type detailed below

Equipment fitted to the craft that is subject to other directives shall be in compliance with both those Directives as well as the RCD. Just because an item of equipment is CE marked does **not** necessarily cover both requirements. For example a properly CE marked and tested gas fridge may be dangerous on a boat. Therefore not only must the equipment meet the other directives it must also be specified that it is suitable for use on a boat.

Declaration:

In addition to meeting the RCD Essential Requirements, all the equipment fitted that is subject to the directives listed below has been installed in accordance with the manufacturer's instructions, thus ensuring that the requirements of these directives are met.

- 1
- 2
- 3
- 4
- 5
- 6

Signed:

Title:.....

Date:

