

Chapter 13

Navigation equipment

13.1 Navigation (general)

13.1.1 This chapter only covers items of navigational equipment which relate to the navigation of the craft as distinct from the safe functioning of the craft. The following paragraphs represent the minimum requirements for normal safe navigation unless it is demonstrated to the Administration that an equivalent level of safety is achieved by other means.

13.1.2 The navigational equipment and its installation should be to the satisfaction of the Administration.

In accordance with this Code, navigational equipment must conform to appropriate performance standards not inferior to those adopted by the IMO. (Required Standards are specified in a table at the end of this Chapter).

Unless indicated otherwise, the standards specified for navigational equipment on United Kingdom HSC are the English Language version of the relevant European Standards published by the British Standards Institute (BSi) and have the status of a British Standard. These standards are in full agreement with the relevant Resolutions of the IMO.

Equipment conforming to the relevant British Standard in force immediately prior to publication of the European Standard may continue to be installed until further notice. That is, any reference to BS 7474 (echo-sounding equipment), for example, may be read as a reference to BS EN ISO 9875: 1995.

Until further notice, in view on the non-availability of new European Standards agreeing with Resolutions A.821(19) (Gyro-Compasses for High-Speed Craft) or A.820(19) (Radar Equipment for High-Speed Craft), equipment conforming with the European Standard specified is to be installed.

The MCA advises that navigational equipment installed on United Kingdom HSC which is not the subject of a carriage requirement through the application of the HSC Code, but for which international standards have been developed should conform to those standards. An example is Electronic Chart Display and Information System (ECDIS) that should comply with IMO Resolution A.817(19).

13.2 Compasses

13.2.1 Craft should be provided with a magnetic compass which is capable of operating without electrical supply, and which may be used for steering purposes. This compass should be mounted in a suitable binnacle containing the required correcting devices and should be suitable for the speed and motion characteristics of the craft.

13.2.2 The compass card or repeater should be capable of being easily read from the position at which the craft is normally controlled.

13.2.3 Each magnetic compass should be properly adjusted and its table or curve of residual deviations should be available at all times.

13.2.4 Care should be taken in siting a magnetic compass or magnetic sensing element so that magnetic interference is eliminated or minimised so far as is practicable.

13.2.5 Passenger craft certified to carry 100 passengers or less should, in addition to the compass required by 13.2.1, be provided with an instrument, suitable for the speed and motion characteristics and area of operation of the craft, providing a heading reference of accuracy superior to that provided by a magnetic compass.

13.2.6 Cargo and passenger craft certified to carry more than 100 passengers should, in addition to the compass required in 13.2.1, be provided with a gyro-compass which should be suitable for the speed and motion characteristics and area of operation of the craft.

13.3 Speed and distance measurement

13.3.1 Craft should be provided with a device to measure speed and distance, except when no device is available which will function reliably at all speeds at which the craft may operate.

13.3.2 Speed and distance measuring devices on craft fitted with the automatic radar plotting aid should be capable of measuring speed and distance through the water.

13.4 Echo-sounding device

13.4.1 Non-amphibious craft should be fitted with an echo-sounding device which will give an indication of depth of water to a sufficient degree of accuracy for use when the craft is in the displacement mode.

The echo-sounding device must be capable of effective operation at full operational speed

13.5 Radar installations

13.5.1 Craft should be provided with at least one azimuth-stabilised radar operating in the X-band (3 cm).

13.5.2 Craft of 500 tons gross tonnage and upwards or craft certificated to carry more than 450 passengers should be provided with at least two radar installations. A second radar may also be provided in craft of less than 500 tons gross tonnage or certified to carry 450 passengers or less where environmental conditions so require.

13.5.3 At least one radar should be equipped with facilities for plotting which are at least as effective as a reflector plotter.

13.5.4 Adequate communication facilities should be provided between the radar observer and the person in immediate charge of the craft.

13.5.5 Each radar installation provided should be suitable for the intended craft speed, motion characteristics and commonly encountered environmental conditions.

13.5.6 Each radar installation should be mounted so as to be as free as practicable from vibration.

13.6 Electronic positioning systems

13.6.1 Where the area of operation of a high speed craft is covered by a reliable electronic position fixing system, the craft should be provided with the means to fix its position using such system.

13.7 Rate-of-turn indicator and rudder angle indicator

13.7.1 A rate-of-turn indicator should be provided unless the Administration determines otherwise. Means should be provided to warn the operator if an operationally dictated maximum rate of turn is being reached.

13.7.2 Craft should be provided with an indicator showing the rudder angle. In craft without a rudder, the indicator should show the direction of steering thrust.

13.8 Other navigational aids

13.8.1 The information provided by navigational systems should be so displayed that the probability of misreading is reduced to a minimum and should be capable of giving readings to an optimum accuracy.

13.9 Searchlight

13.9.1 Craft should be equipped with at least one adequate searchlight which should be controllable from the operating station.

13.9.2 One portable signalling lamp capable of operating independently of the craft's main electrical supply should be provided and maintained ready for use in the operating compartment at all times.

13.10 Night vision equipment

13.10.1 When operational conditions justify the provision of night vision enhancement equipment, such equipment should be fitted.

Night vision equipment has limitations, particularly weather related problems. Ambient light conditions and background light reduce effectiveness in pilotage situations. A dedicated observer must be appointed (an additional person to the navigating team).

13.11 Steering arrangement and propulsion indicators

13.11.1 The steering arrangement should be so designed that the craft turns in the same direction as that of the wheel, tiller, joy stick or control lever.

13.11.2 Craft should be provided with indicators showing the mode of the propulsion system(s).

13.11.3 Craft with emergency steering positions should be provided with arrangements for supplying visual compass readings to the emergency steering position.

13.12 Automatic steering aid (automatic pilot equipment)

13.12.1 Craft should where possible be equipped with automatic pilot equipment.

13.12.2 The alarm signalling facilities prescribed in paragraphs 3.1 and 3.2 of the Recommendation on performance standards for automatic pilots, adopted by the Organisation by resolution A.342(IX), may be omitted.

13.12.3 Provision should be made to change from the automatic to manual mode by a manual override.

13.13 Performance standards

13.13.1 All equipment to which this chapter applies should be of a type approved by the Administration. Subject to 13.13.2, such equipment should conform to performance standards not inferior to those adopted by the Organisation.

The performance requirements of European standards are in full agreement with the relevant Resolutions of the IMO, are identical to the relevant standards published by the International Electrotechnical Committee (IEC) or the International Organisation for Standardisation (ISO) and the British Standard in force at the time of publication for the equipment concerned. All equipment must also meet the general requirements specified in BS EN 60945 and, where appropriate, be provided with a digital interface conforming with BS EN 61162-1: 1996.

13.13.2 Equipment installed before the adoption of performance standards by the Organisation may be exempted from full compliance with the performance standards having due regard to the criteria which the Organisation may adopt in connection with such standards.

Standard for Navigational equipment:

<i>EQUIPMENT</i>	<i>IMO RESOLUTION</i>	<i>EUROPEAN STANDARD</i>
<i>MAGNETIC COMPASS (STEERING)</i>	<i>A.382(X)</i>	<i>BS MS 2 Part 2: 1969</i>
<i>GYRO COMPASS</i>	<i>A.821(19)</i>	<i>BS EN ISO 8728: 1995</i>
<i>ELECTROMAGNETIC (FLUXGATE) COMPASSES</i>		
<i>RADAR</i>	<i>A.820(19)</i>	<i>BS EN 60936: 1993</i>
<i>ECHO SOUNDER</i>	<i>A.224(VII)</i>	<i>BS EN ISO 9875: 1995</i>
<i>SPEED AND DISTANCE MEASURING EQUIPMENT</i>	<i>A.824(19)</i>	<i>BS EN 61023: 1993</i>
<i>AUTOMATIC RADAR PLOTTING AID (ARPA)</i>	<i>A.823(19)</i>	<i>BS EN 60872: 1993⁵</i>
<i>RATE OF TURN INDICATOR</i>	<i>A.526(13)</i>	
<i>AUTOMATIC STEERING AIDS (AUTOMATIC PILOTS)</i>	<i>A.822(19)</i>	
<i>DECCA NAVIGATOR</i>	<i>A.816(19)</i>	<i>BS EN 61135: 1994</i>
<i>LORAN-C AND CHAYKA RECEIVERS</i>	<i>A.818(19)</i>	<i>BS EN 61075: 1993</i>
<i>GLOBAL POSITIONING SYSTEM (GPS) RECEIVER EQUIPMENT</i>	<i>A.819(19)</i>	