# 1965 No. 1112

# MERCHANT SHIPPING

## The Merchant Shipping (Direction-Finders) Rules 1965

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| *Made* - - - - | *12th May* 1965 |
| *Laid before Parliament* | *20th May* 1965 |
| *Coming into Operation* | *26th May* 1965 |

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The Board of Trade in exercise of their powers under Section 5 of the Merchant Shipping (Safety Convention) Act 1949(a) and as having effect by virtue of the Transfer of Functions (Shipping and Construction of Ships) Order 1965(b) and of all other powers enabling them in that behalf hereby make the following Rules :—

*Interpretation, repeal and transitional provisions*

**1.**—(1) These Rules shall come into operation on the 26th May 1965 and may be cited as the Merchant Shipping (Direction-Finders) Rules 1965.

(a) 12, 13 & 14 Geo. 6. c. 43. (b) S.I. 1965/145 (1965 I, p. 438).

(2) The Interpretation Act 1889(a) shall apply to the interpretation of these Rules as it applies to the interpretation of an Act of Parliament and as if these Rules and the Rules hereby revoked were Acts of Parliament.

(3) In these Rules, unless the context otherwise requires, the following expressions have the following meanings respectively—

" Existing installation " means

(*a*) an installation wholly installed before the date on which these Rules come into operation; and

(*b*) an installation part of which was installed before the date on which these Rules come into operation and the rest of which consists either of parts installed in replacement of identical parts or parts which comply with the relative requirements of these Rules;

" Fishing boat " has the same meaning as in Section 370 of the Merchant Shipping Act 1894(b);

" Interference " has the same meaning as in the Wireless Telegraphy Act 1949(c);

" Mile " means a nautical mile of 6,080 feet;

" Tons " means gross tons;

In relation to classes of emission: —

" Class A1 " means telegraphy by on-off keying without the use of a modulating audio frequency;

" Class A2 " means telegraphy by the on-off keying of an amplitude-modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission;

" Class B " means damped waves.

(4) The Merchant Shipping (Direction-Finders) Rules 1952(d) are hereby revoked.

(5) The provisions of Schedule 1 to these Rules shall have effect for the purpose of the transition from the law in force before these Rules come into operation to the provisions of these Rules.

*Application*

**2.** These Rules shall apply to ships which are—

(*a*) sea-going British ships of 1,600 tons and upwards registered in the United Kingdom;

(*b*) other sea-going ships of 1,600 tons and upwards while they are within any port in the United Kingdom;

and are not—

(i) troopships not registered in the United Kingdom;

(ii) ships not propelled by mechanical means;

(iii) pleasure yachts; or

(iv) fishing boats.

Provided that these Rules shall not apply to any ship not engaged on an international voyage.

*Provision of direction-finders*

**3.** Every ship to which these Rules apply shall be provided with a direction-finder, complying with the requirements specified in Schedule 2 to these Rules,

(a) 52 & 53 Vict. c. 63.
(b) 57 & 58 Vict. c. 60.
(c) 12, 13 & 14 Geo. 6. c. 54.
(d) S.I. 1952/1957 (1952 II, p. 1831).

and every ship to which these Rules apply registered in the United Kingdom shall comply with the Performance Specification for a Direction-Finding Equipment 1965 issued by the Postmaster General.

*Climatic and durability tests*

**4.**—(1) The direction-finder required by these Rules shall be such that it will be free from mechanical defects and will comply with the requirements of these Rules—

(*a*) while undergoing the vibration, dry heat, and low temperature tests required by Schedule 3 to these Rules;

(*b*) when subjected to the damp heat test required by the said Schedule; and

(*c*) immediately after undergoing the other tests required by the said Schedule.

(2) The direction-finder aerial system referred to in Schedule 2 to these Rules shall be such that after undergoing the mould growth tests required by Schedule 3 to these Rules no mould growth will be present on it.

*Interference with reception*

**5.**—(1) At no time when the ship is at sea shall interference or mechanical noise produced by the direction-finder required by these Rules or by other equipment in the ship be sufficient to prevent the efficient determination of radio bearings by means of the direction-finder.

(2) Any ship to which these Rules apply which is provided with a direction-finder not being an existing installation shall also be provided with a communal aerial system for all broadcast receivers in respect of which it is impracticable to erect efficient and properly installed aerials which—

(i) are outside a radius of 50 feet from the direction-finder aerial; or

(ii) do not rise above the base of the direction-finder aerial; or

(iii) can be lowered quickly and stowed easily when the direction-finder is in use.

*High voltage parts*

**6.**—(1) All parts and wiring of the equipment specified in these Rules in which the direct and alternating voltages (other than radio frequency voltages) combine at any time to give an instantaneous voltage greater than 50 volts shall be protected from accidental access.

(2) All parts and wiring of the equipment specified in these Rules (other than the parts and wiring of a rotating machine) in which the direct and alternating voltages (other than radio frequency voltages) combine at any time to give an instantaneous voltage greater than 250 volts shall be isolated automatically from all sources of electrical energy when the means of protection are removed.

*Supply of electrical energy*

**7.** There shall be available in every ship to which these Rules apply while she is at sea and at all reasonable times when she is in port, a supply of electrical energy sufficient for the operation of the direction-finder in accordance with these Rules, and for testing purposes and for the charging of any batteries which are a source of electrical energy for the direction-finder.

*Charging of batteries*

**8.** If batteries are provided as a source of electrical energy for the direction-finder means shall be provided on board every ship to which these Rules apply for the charging of such batteries from the ship's main source of electrical energy. The master of the ship shall cause such batteries to be tested once a day by voltmeter and once a month by hydrometer, and shall cause any battery which is found not to be fully charged to be brought up to that condition as soon as possible.

*Installation of direction-finder*

**9.**—(1) The direction-finder shall be installed in such a position that efficient determination of radio bearings by means of the direction-finder will not be hindered by extraneous noises.

(2)(*a*) The direction-finder aerial system referred to in Schedule 2 to these Rules shall be mounted in such a manner that the efficient determination of radio bearings by means of the direction-finder will be hindered as little as possible by the proximity of aerials, derricks, wire halyards and other large metal objects.

(*b*) Unless the feeder cables connecting the direction-finder aerial system with the receiver forming part of the direction-finder consist of solid-dielectric screened cable, they shall be protected by metal tubes which are bonded to earth. The joints of the feeder cables shall be watertight.

*Means of communication*

**10.**—(1) In every ship to which these Rules apply an efficient two-way means of calling and voice communication shall be provided between the receiver forming part of the direction-finder and the bridge from which the ship is normally navigated.

(2) In every such ship an efficient means of signalling shall be provided between the receiver forming part of the direction-finder and the ship's standard compass or gyro compass repeater, if any.

*Restriction of use of the direction-finder*

**11.** The direction-finder required by these Rules shall not be used

(*a*) for any purpose other than the business of the ship; or

(*b*) for keeping the radio watch required by Rule 16 of the Merchant Shipping (Radio) Rules 1965(a).

*Calibration*

**12.**—(1) The master of every ship to which these Rules apply shall cause the direction-finder to be calibrated in accordance with this Rule as soon as practicable after it has been installed in the ship and whenever any change is made in the position of the direction-finder aerial system.

(2) The direction-finder shall be calibrated by two persons, the one being experienced in the taking of radio bearings and the other experienced in the taking of visual bearings. The calibration shall be carried out by taking simultaneous radio and visual bearings of a calibrating transmitter, and such bearings shall be taken at intervals of not greater than 5 degrees throughout 360 degrees on a frequency between 285 kc/s and 315 kc/s.

(3) Calibration tables and curves shall be prepared on the basis of the bearings taken in accordance with paragraph (2) of this Rule.

(a) S.I. 1965/1107 (1965 II, p. 3064).

(4) The master of every ship to which these Rules apply shall cause the calibration tables and curves prepared in accordance with the foregoing provisions of this Rule to be verified by means of check-bearings—

(*a*) at intervals not exceeding twelve months, and

(*b*) whenever any change is made in any structure or fitting on deck which is likely to affect the accuracy of the direction-finder.

If such verification shall show that the calibration tables or curves are materially inaccurate the master of the ship shall cause the direction-finder to be recalibrated as soon as practicable in the manner specified in paragraphs (2) and (3) of this Rule.

*Records of calibration and verification*

**13.** The master of every ship to which those Rules apply shall cause the following records to be kept on board in a place accessible to any person operating the direction-finder, and to be available for inspection at any reasonable time by a surveyor of ships:—

(*a*) a list or diagram indicating the condition and position, on the most recent occasion on which the direction-finder was calibrated, of

(i) the aerials, and of

(ii) all moveable structures

on board the ship which might affect the accuracy of the direction-finder;

(*b*) the calibration tables and curves which were prepared on the most recent occasion on which the direction-finder was calibrated;

(*c*) a certificate of calibration, in the form specified in Schedule 4 to these Rules, relating to the most recent occasion on which the direction-finder was calibrated and signed by the persons making the calibration; and

(*d*) a record, in the form specified in Schedule 5 to these Rules, of check-bearings taken for the verification of calibration, the bearings being numbered in the order in which they were taken.

*Wiring diagrams and instructions*

**14.** A schematic wiring diagram of the direction-finder and a book containing adequate instructions as to the use of the direction-finder shall be provided and shall be available at all times for use by any person operating or testing the direction-finder.

*Roy Mason,*
Minister of State,
Board of Trade.

12th May 1965.

## SCHEDULE 1

### Transitional Provisions

Rule 1(5)

1. Rules 3 and 4 of these Rules shall not apply to any ship to which these Rules apply which is fitted with a direction-finder which is an existing installation or which is installed before 26th May 1967 if it complies with the require-

ments of the Second and Third Schedules to the Merchant Shipping (Direction-Finders) Rules 1952 which would have been applicable to it if the said Rules had not been revoked.

2. Rules 3 and 4 of these Rules shall not apply before 1st November 1965 to any ship to which these Rules apply which is fitted with a direction-finder which is an existing installation and which does not comply with the requirements of the Second and Third Schedules to the Merchant Shipping (Direction-Finders) Rules 1952 as aforesaid. Provided that the direction-finder is capable of:—

(i) receiving Class A1, A2 and B emissions on all frequencies from 255 kc/s to 525 kc/s; and

(ii) taking radio bearings when the field strength at the direction-finder aerial system is as low as 50 microvolts per metre.

## SCHEDULE 2

### Direction-Finder

Rule 3

1. GENERAL.—The direction-finder shall include a receiver and a direction-finder aerial system. The mechanical parts of the direction-finder aerial system, other than ball bearings, hose clips, set screws and other similar small parts, shall consist of non-magnetic material.

2. FREQUENCY RANGES AND CLASSES OF EMISSION.—The receiver shall be capable of receiving Class A1, A2 and B emissions of any frequency within the range of 255 kc/s to 525 kc/s.

3. SENSITIVITY.—In the absence of interference the direction-finder shall have sufficient sensitivity to permit accurate bearings being taken on a signal having a field strength as low as 50 microvolts per metre.

4. ACCURACY OF BEARINGS.—When the direction-finder is tested, and after due allowance has been made for any site errors, the bearing as indicated by the scale of the direction-finder shall be within one degree of the correct bearing. This requirement shall be met at all frequencies in the range of frequencies specified in paragraph 2 of this Schedule and throughout the whole 360 degrees of azimuth regardless of the previous setting of the bearing indicator.

5. RADIATION.—The receiver when in use shall not produce a field exceeding 0.1 microvolt per metre at a distance of one mile from the receiver.

## SCHEDULE 3

### Climatic and Durability Tests

Rule 4

1. In this Schedule—

(1) references to Class B equipment shall be construed as references to each part of the direction-finder other than the direction-finder aerial system;

(2) references to Class X equipment shall be construed as references to the direction-finder aerial system.

2. Class B and Class X equipment shall be subjected to tests conducted in the order in which they appear in the following Table:—

TABLE

| Nature of Test | Classes of Equipment to which the test shall be applied |
|---|---|
| Visual Inspection and Performance Test | B and X |
| Inspection under Vibration | B and X |
| Bump Test | B and X |
| Dry Heat Cycle | B and X |
| Damp Heat Cycle | B and X |
| Low Temperature Cycle | B and X |
| Rain Test | X |
| Immersion Test | X |
| Corrosion Test | B and X |
| Mould Growth Test | X |
| Visual Inspection and Performance Test | B and X |

3. The Tests referred to in paragraph 2 of this Schedule shall be conducted respectively in the manner described in the Performance Specification for the Climatic and Durability Testing of Marine Radio Equipment 1965 issued by the Postmaster General.

## SCHEDULE 4

### CERTIFICATE OF CALIBRATION OF DIRECTION-FINDER

Rule 13 (c)

We, the undersigned, hereby certify that we have this day

(*a*) calibrated in accordance with the Merchant Shipping (Direction-Finders) Rules 1965 the direction-finder installed in the

s.s./m.v. .....

(*b*) handed to the Master of that ship tables of calibration corrections.

(*c*) adjusted the said direction-finder so that the readings taken thereby, when corrected with such tables differed from the correct bearings by no more than plus or minus two degrees.

We hereby further certify that the Master of the said ship has been furnished with a list or diagram indicating the condition and position, at the time of such calibration, of the aerials and of all movable structures on board the ship which might affect the accuracy of the direction-finder.

.....Radio Observer.

.....Visual Observer.

.....Date

## SCHEDULE 5

### RECORD OF CHECK-BEARINGS TAKEN BY MEANS OF THE DIRECTION-FINDER

Rule 13 (*d*)

| | | | |
|---|---|---|---|
| | (1) | Serial Number of Bearings | |
| | (2) | Date | |
| | (3) | Times (G.M.T.) | |
| | (4) | Latitude | Ship's Approximate Position |
| | (5) | Longitude | |
| | (6) | Distance from Transmitter | |
| | (7) | Direction-Finder Bearing of (Name) | |
| | (8) | Direction-Finder relative Bearing Corrected for Q.E. | |
| | (9) | Ship's Head by Compass 0/360° | |
| | (10) | Total Compass Error | |
| | (11) | ½ Convergency Applied | |
| | (12) | Ship's Head Corrected (True) | |
| | (13) | True Bearing by Direction-Finder [Col. (8) and Col. (12)] | |
| | (14) | True Bearing by Visual Check or Calculation (whether Visual or Calculation to be indicated; if by Calculation, the method to be stated.) | |
| | (15) | Correction required to make Col. (13) equal Col. (14) (indicating whether − or +) | |
| | (16) | Signature of Observer or Observers | |

## EXPLANATORY NOTE

*(This Note is not part of the Rules)*

These Rules supersede the Merchant Shipping (Direction-Finders) Rules 1952. They require sea-going ships of 1,600 gross tonnage and over engaged on international voyages to be provided with direction-finders, and include such requirements as appear to the Board of Trade to implement the provisions of the International Convention for the Safety of Life at Sea 1960 relating to direction-finders.

The principal change is that these Rules now provide for other types of direction-finders as well as for aural-null types.