

# Watchkeeping

## Standards and principles of watchkeeping

Most incidents at sea are caused by human error. In many of these incidents the standard of watchkeeping was not satisfactory or the watchkeeper was not competent. As discussed in chapter one, a watchkeeper suffering fatigue is far more likely to make an error of judgement than one who is well rested and alert.

When the master is not present at the bridge or wheelhouse the crew members are responsible for the safe navigation of the vessel and avoidance of collision or grounding.

### The bridge/wheelhouse

This is the control centre of a vessel and a proper lookout must be maintained at all times from here. Extra lookouts should be posted.

The person at the helm should not be considered a lookout except in smaller vessels with an unobstructed all-round view from this position, and their night vision must not be impaired.

### Duties of the watchkeeper

The duties of the watchkeeper fall into three fundamental categories:

1. Maintain a proper lookout at all times using all means available. No other duties should be assigned that could interfere with this task.
2. Ensure safe navigation by regularly checking of the vessel's position, course, speed and the identification of any potential navigational hazards such as shoals or reefs. The vessel's navigational details must be recorded in the official log book.
3. Collision avoidance by monitoring the movements of other surrounding vessels, use of the radar, the display of appropriate lights and shapes and a thorough knowledge of the collision regulations.

### When to call the master

The watchkeeper shouldn't hesitate to approach the master if in any doubt about what action should be taken.

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Some circumstances may include, but are not limited to:

- restricted visibility is encountered or expected
- traffic conditions are causing concern
- difficulty is experienced in maintaining the course
- navigational marks, lights or landmarks are not sighted when expected
- breakdowns of essential equipment occurs
- navigational hazards are met
- changed weather conditions threaten the safety of the ship.

Notifying the master is a requirement if the watchkeeper is in doubt, but the watchkeeper shouldn't hesitate to take any action necessary for the safety of the ship. Even if the master is on the bridge, this does not relieve the watchkeeper of their duties until specifically informed that the master has assumed control.

## The collision regulations

The *International Regulations for Preventing Collisions at Sea, 1972* (generally referred to as the 'Colregs') is an International Maritime Organization convention that has been adopted worldwide as the 'rules of the road' on the water.

It is the duty of anyone in charge of a vessel to be able to correctly apply the Colregs in all circumstances in the interest of their own safety and the safety of other vessels using the seaway.

A copy of the Colregs should be kept on the bridge of the vessel at all times. Detailed below are some of the rules that crew members need to be aware of when participating in watchkeeping duties on the vessel.

Note: to provide a ready reference and to avoid ambiguity that could arise, the Regulations are printed ad verbatim. In addition, a brief overview has been included to briefly outline the meaning of each Rule. It is important that these Rules are studied until a good working knowledge is obtained.

### Rule 2 — Responsibility

- a) Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.
  - b) In construing and complying with these rules, due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger.
- This Rule makes allowance for vessels to depart from the Rules in general in order to avoid collision. In the event of a collision, responsibility may still lie partly with the stand on vessel if an avoiding action could have been taken that is outside of the parameters of these Rules.

## Rule 5 — Lookout

Every vessel shall at all times maintain a proper lookout by sight and hearing, as well as by all available means appropriate in the prevailing circumstances and conditions, so as to make a full appraisal of the situation and of the risk of collision.

This rule is fundamental to watchkeeping principles and practice and reinforces that the bridge is never be left unattended.

- Keep a 360 degree lookout — not just in front and either side of the ship.
- Use every aid available such as radar, if the vessel is fitted with one.
- Post extra lookouts if visibility deteriorates or traffic density increases.

## Rule 6 — Safe Speed

Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions.

- Be aware of the state of visibility, density of traffic, the manoeuvring characteristics of the vessel, the presence of background lights at night, the sea and water conditions at the time and the ship's draft in relation to the available water when determining safe speed.

## Rule 7 — Risk of Collision

Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if a risk of collision exists. If there is any doubt such risk shall be deemed to exist

- If the bearing to an approaching vessel does not noticeably change a risk of collision exists.

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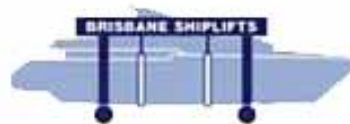
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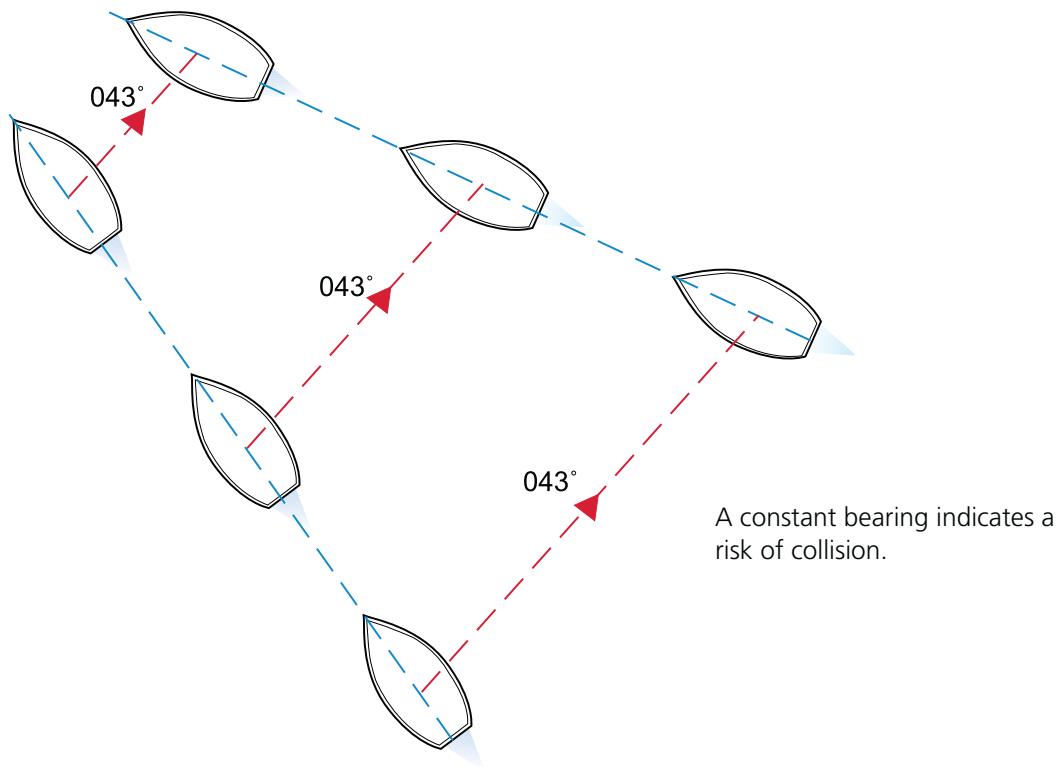
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- Even if the bearing changes, a risk of collision may still exist — particularly when the approaching vessel is large or at close range.
- If you are unsure you must assume there is a risk of collision and act accordingly.



### Rule 8 — Action to avoid collision

Any action taken to avoid collision shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.

- Before the vessel is in a close quarters situation, positive action to avoid a collision should have taken place.
- The action needs to be easily apparent to the other vessel. For example, a large course alteration of 60 degrees is preferred rather than a series of 20 degree course alterations.
- The effectiveness of the action should be monitored until the other vessel is well clear.

### Rule 9 — Narrow channels

A vessel proceeding along the course of a narrow channel or fairway shall keep as near to the outer limit of the channel or fairway which lies on its starboard side as is safe and practicable.

- Stay on the side of the channel that lies on the starboard side of your ship.
- If approaching a blind corner, navigate with particular caution and sound one prolonged blast (4-6 seconds) of the sound signal.



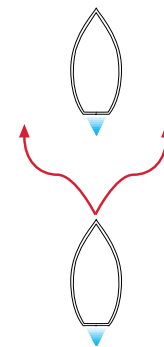
Keeping to starboard.

### Rule 13 — Overtaking

Any vessel overtaking any other shall keep out of the way of the vessel being overtaken.

When a vessel is in any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly.

- An overtaking situation remains an overtaking situation despite any subsequent alteration of the bearing between the two vessels.
- The duty of the overtaking vessel to keep clear remains until it is finally past and clear.



Overtaking vessel keeps clear.

### Rule 14 — Head-on situation

When two power-driven vessels are meeting on reciprocal or nearly reciprocal courses so as to involve risk of collision, each shall alter its course to starboard so that each shall pass on the port side of the other.

When a vessel is in any doubt as to whether such a situation exists, she shall assume that it does and act accordingly.

- Each vessel in this case is a give way vessel and should, therefore, take early action to alter its course to starboard.



Head on situation – both alter course to starboard and give way to the other vessel.

### Rule 15 — Crossing situation

When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on its own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel.

- The give way vessel should pass astern by altering course to starboard and if necessary, reduce speed to enable passing at a safe distance.

### Rule 17 — Action by stand-on vessel

a) i) Where one of two vessels is to keep out of the way, the other shall keep its course and speed.

ii) The latter vessel may however take action to avoid collision by its manoeuvre alone, as soon as it becomes apparent to it that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules.

b) When, from any course, the vessel required to keep its course and speed finds itself so close that collision cannot be avoided by the action of the give way vessel alone, it shall take such action as will best aid to avoid collision.



In 2003, two passenger vessels collided in the Whitsunday Passage in open water, perfect weather conditions and with no other traffic in the vicinity. While one vessel had the right of way and the other should have taken action to avoid collision, both vessels stood on and each expected the other to alter course. Clearly, if the vessel in the stand on position thought that there was a risk of collision, action should have been taken according to the Rule 17.

- The stand-on vessel must take action if necessary to avoid collision.
- In doing so, a turn to port should be avoided in a crossing situation in case the give way vessel complies with its obligations at the last minute and turns to starboard which will result in a head-on collision.

### Rule 18 — Responsibilities between vessels

- a) Except where Rules 9 and 13 otherwise require; a power-driven vessel underway shall keep out of the way of:
- i) a vessel not under command
  - ii) a vessel restricted in its ability to manoeuvre
  - iii) a vessel engaged in fishing
  - iv) a sailing vessel
- c) a vessel engaged in fishing when under way shall, so far as possible, keep out of the way of:
- i) a vessel not under command
  - ii) a vessel restricted in its ability to manoeuvre.
- There are exceptions to this rule. The most important exception is the overtaking situation, where even a sailing vessel, if overtaking a power vessel, is required to keep clear.



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## Rule 19 — Conduct of vessels in restricted visibility

Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility. A power-driven vessel shall have its engines ready for immediate manoeuvre.

- Restricted visibility does not include the hours of darkness unless visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms or other similar causes.
- Under this rule, there are no give way or stand on vessels. Every vessel navigates with extreme caution, and if a vessel is detected forward of the beam that may be in close proximity, speed should be reduced to the minimum with which you can manoeuvre or, if necessary, take all way off until the danger of collision is over.

**Remember:** look all around, give way to starboard, turn to starboard and stay to starboard.

## Navigation lights

By law boats operating from sunset to sunrise, whether at anchor or underway, must display the correct navigation lights.

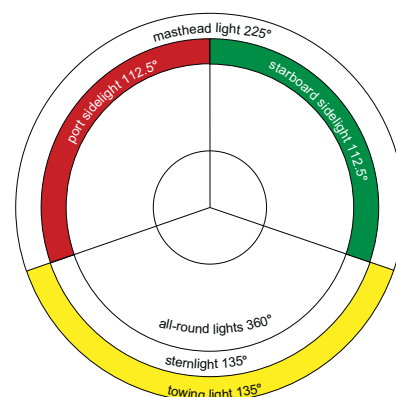
A vessel is underway when it is not at anchor and is made fast to the shore or aground — a vessel underway may in fact be stationary. A vessel being propelled through the water is said to be making way. In the Colregs, making way only has relevance to fishing vessels, vessels restricted in their ability to manoeuvre and vessels not under command.

Navigation lights can tell you approximately how large a vessel is, what operations it is currently engaged in (such as fishing or towing) and the approximate direction of its travel.

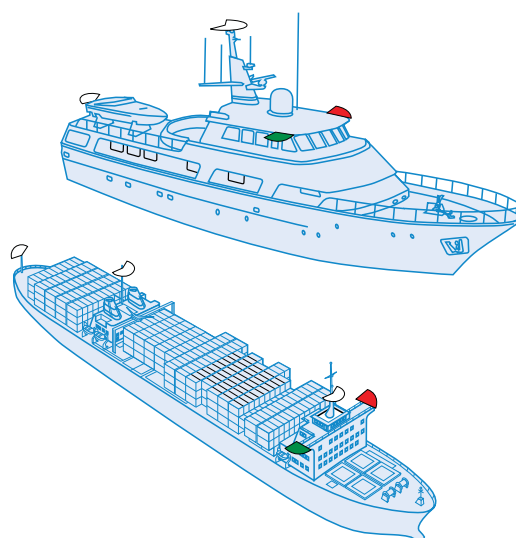
These lights must also be used in daylight hours during periods of restricted visibility or at any other time that it is deemed necessary. They must be positioned so that they are not obscured by the vessel's superstructure or interfered with by the deck lights.

Power-driven vessels that are under 15 metres in length must display a forward masthead light and a stern light.

Power-driven vessels that are 50 metres or more in length must display a second masthead light that is abaft and higher than the forward one.



Navigation lights and their arcs of visibility.



















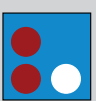


Masthead lights.

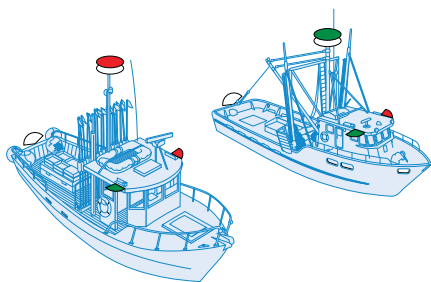
## Other lights and shapes

There are many other combinations of lights and shapes (for daytime use) that indicate the activity that the vessel is engaged in, such as fishing, dredging, constrained by its draught, or currently at anchor.

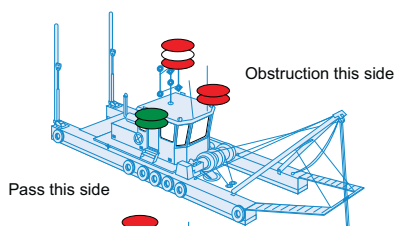
The following table summarises the most common types.

Vessel	Day shapes	'Signature lights'	Notes
<b>Not under command *</b>			<b>Replaces masthead light(s)</b>
<b>Restricted in ability to manoeuvre *</b>			
<b>Constrained by draft</b>			
<b>Engaged in fishing *</b>			
<b>Engaged in trawling *</b>			
<b>Sailing</b>		No masthead light	
<b>Power-driven</b>		Masthead light	
<b>* displays sidelights and stern light only when making way</b>			
<b>Towing</b>		 *  **	<b>Up to 200 m</b>
		 *  **	<b>Over 200 m</b>
<b>* replaces one masthead light (same arcs as masthead)</b>			
<b>** replaces one masthead light (same arcs as masthead) stern</b>			
<b>At anchor</b>			
<b>Aground</b>			

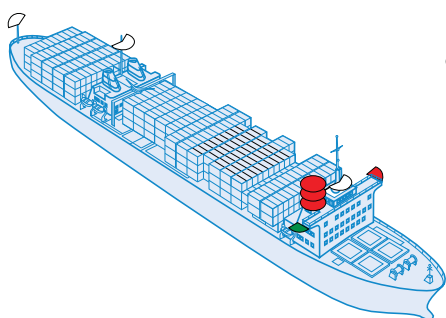
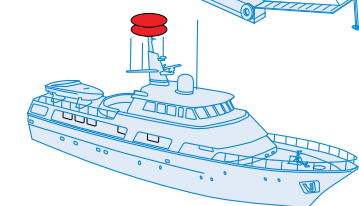
Smaller, power-driven vessels that do not display any lights other than navigation lights must keep clear of vessels as described below.



- Engaged in fishing and trawling.



- Vessel restricted in its ability to manoeuvre due to the nature of its work (top image) or a vessel not under command due to some exceptional circumstance (bottom image).



- A vessel that is constrained by its draught and, as a result, limited to a narrow channel or fairway.

## Sound signals

The Colregs also include manoeuvring and warning signals that must be given when vessels are in sight of each other.

The most common signals are:

- 1 short blast – I am altering my course to starboard.
- 2 short blasts – I am altering my course to port.
- 3 short blasts – I am operating astern propulsion.
- 5 (or more) short blasts – I am in doubt of your intentions. (Note: A short blast is of about one second's duration)

## The IALA buoyage system

Queensland uses an internationally-recognised uniform coding system of navigation marks known as the International Association of Lighthouse Authorities (IALA) buoyage system 'A'. The system uses five different types of marks to distinguish safe navigation. It is essential for watchkeepers to recognise and pass them safely and in the correct manner.

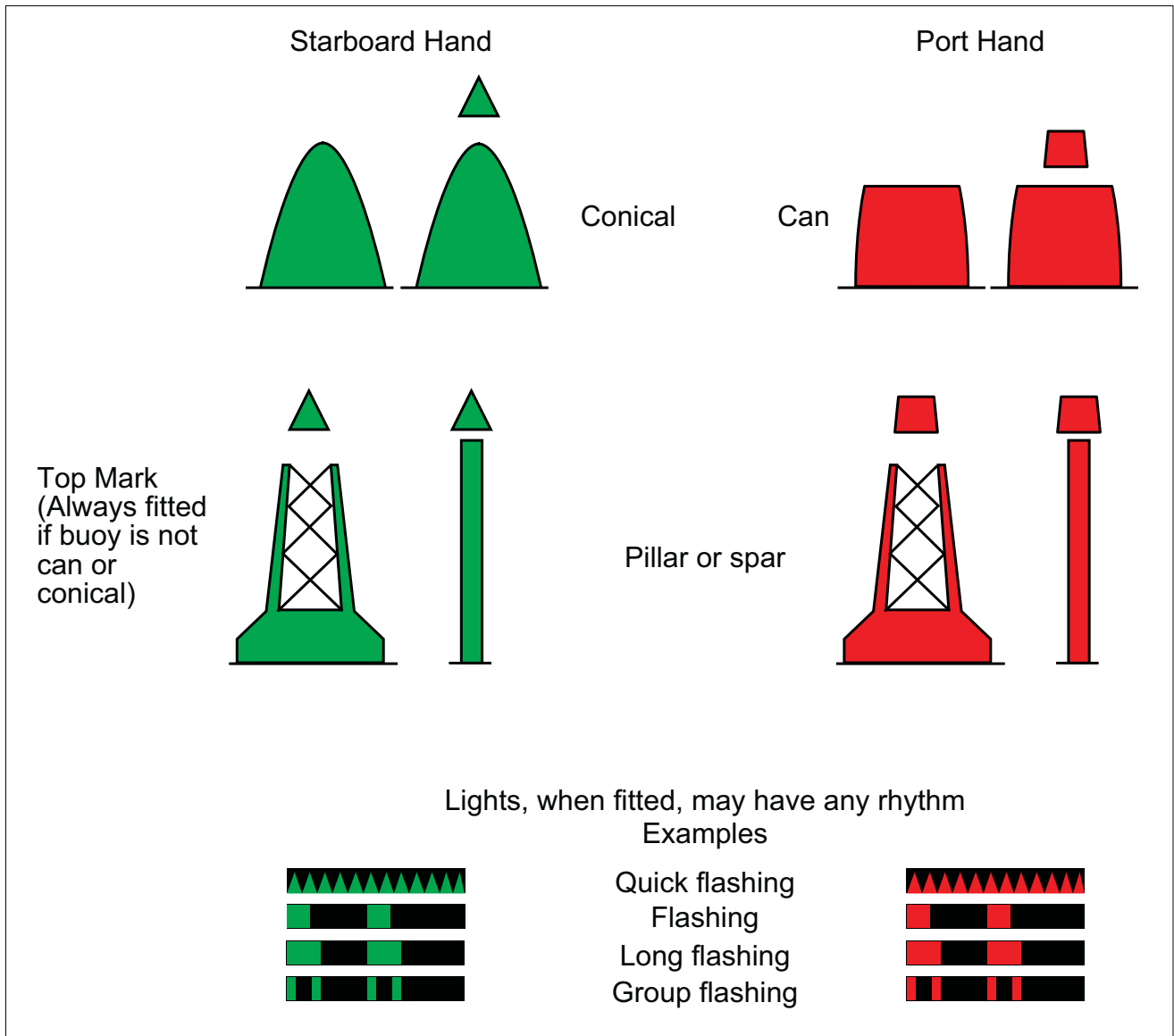
## Lateral marks



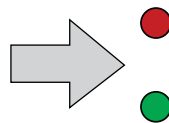
Lateral marks are positioned to define well-established channels and to indicate port and starboard sides of the navigation route into a port. Lateral marks are not always placed next to each other and the safe side to pass is determined by the direction of travel.

When coming from seaward (proceeding upstream, in the direction of flood tide or towards port), keep the red (port) lateral marks on your port side and the green (starboard) lateral marks on your starboard side.

The reverse applies when proceeding seawards.



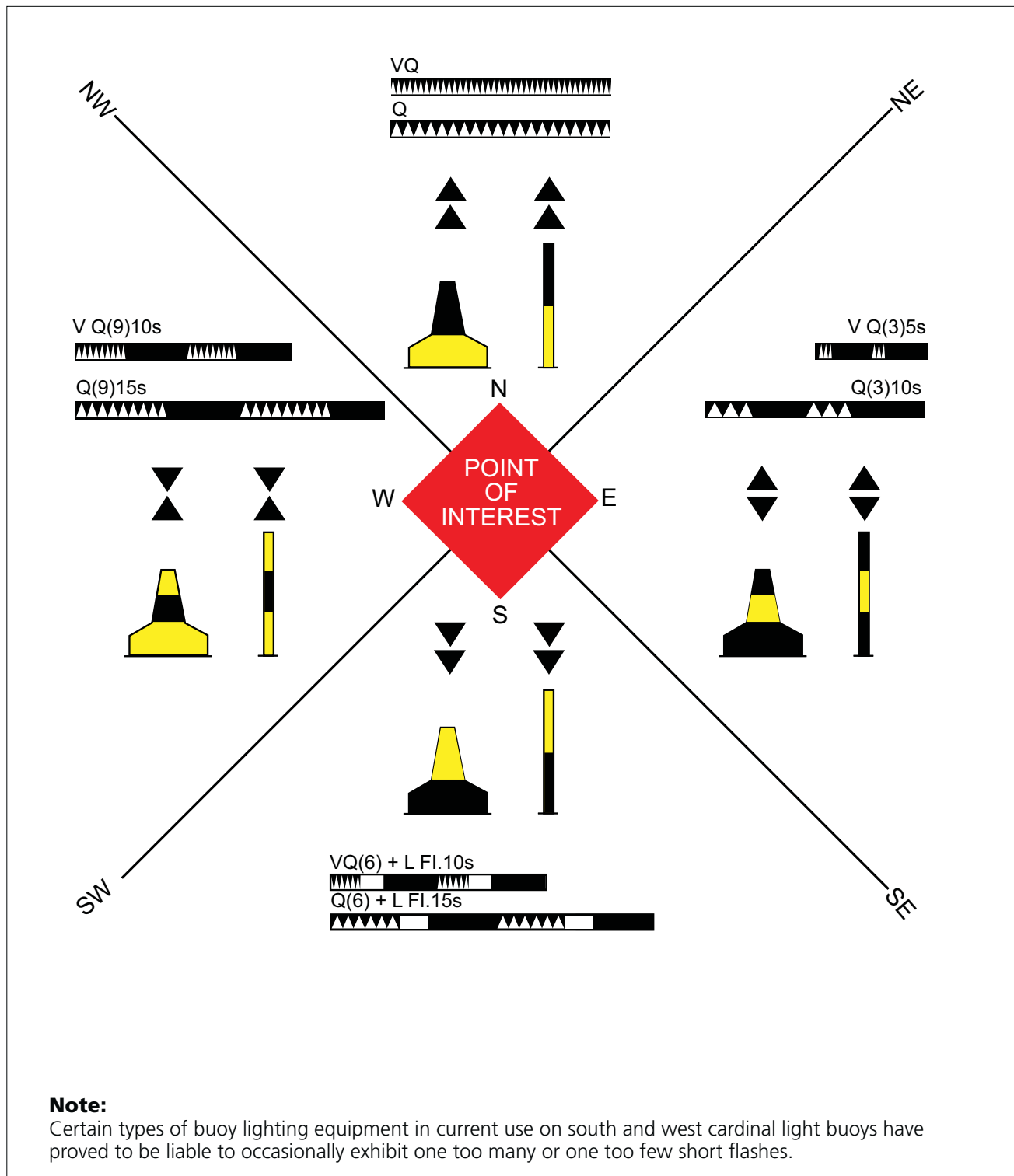
Where there is any doubt, the direction of buoyage is indicated on the chart by the symbol:



Lateral marks.

## Cardinal marks

A cardinal mark indicates where the best and safest water may be found and is used in conjunction with a compass. Cardinal marks may indicate the deepest water in the area, the safe side on which to pass a danger or may draw attention to a feature in a channel such as a bend, junction or end of a shoal.



Cardinal marks.

Vessels should pass eastwards of an east cardinal mark, southwards of a south cardinal mark, westwards of a west cardinal mark, and northwards of a north cardinal mark.

By day, the colour scheme can be remembered by noting that the black on the pillar or spar is positioned where the conical topmarks point.

- North — the topmarks point up.
- East — the topmarks point outwards.
- South — the topmarks point downwards.
- West — the topmarks point inwards.

Cardinal marks (when they are lit) always display a quick flashing or a very quick flashing white light.

- North — flashes continuously.
- East — flashes in groups of three.
- South — flashes in groups of six (each group being followed by a long flash to aid in certain identification of a south cardinal mark as separate from the others).
- West — flashes in groups of nine.

To assist in remembering cardinal marks, associate the number of flashes of each group with that of a clock face. That means that north is at 12 o'clock, east is at three o'clock, south is at six o'clock and west is at nine o'clock.



### Isolated danger mark

Isolated danger marks designate an isolated danger of limited extent which has navigable water all round it, for example an isolated shoal, rock or wreck.

#### Isolated danger mark features:

- **Colour** — black with one or more red horizontal bands.
- **Top mark**— two black spheres positioned vertically and clearly separated.
- **Light** — a white flashing light showing groups of two flashes.

The characteristics may be best remembered by association of two flashes with two spheres as the top marks.

Note: the danger may extend well beyond the mark so don't approach the isolated danger mark too closely.

<p><b>Top mark</b> (This is a very important feature by day and is fitted wherever practicable)</p> <p><b>Shape:</b> Pillar or spar</p>		<p>Light, if fitted, is white, group flashing (2)</p> <p>F(2) Gp F(2)</p>
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Isolated danger mark.