

# Aids to Navigation

This paper is a summary of The Swedish Transport Agency's regulation TSFS 2017:66. The information applies to Swedish water.

Floating aids to navigation are used to mark the side limits of fairways, natural and other obstructions such as isolated shoals and wrecks, other areas or conditions significant to navigation, and new dangers.

**Floating aids to navigation are divided into categories:**

- Lateral Marks
- Cardinal Marks
- Isolated Danger Marks
- Safe Water Marks
- Special Marks
- New Dangers

**Floating aids to navigation are characterised by one or more of the following factors:**

- Colour
- Shape
- Top mark
- Light (colour and character)



Figure 1: Example of AtoN from Rotationsplast AB. Customized Special Mark.

## Lateral Marks

Lateral marks define the borders of channels and indicate the direction of buoyage.

**Lateral marks are characterized by:**

Table 1. Port mark

Attribute	Appearance
Colour	Red
Shape	Can buoy
Top mark	Red cylinder
Light colour (if installed)	Red
Light character	Any character
Retroreflecting material	Red at the upper part of the mark



Table 2. Starboard mark

Attribute	Appearance
Colour	Green
Shape	Conical
Top mark	Green cone
Light colour (if installed)	Green
Light character	Any character
Retroreflecting material	Green at the upper part of the mark



If the shape and color of the lateral marks do not indicate clearly whether it is a port or starboard mark with regard to icing, light or visibility conditions, it should be equipped with a top mark.

## Cardinal Marks

Cardinal marks are named according to the quadrant (north, east, south or west) in which the mark is placed in bearing from the shoal or danger. Boats should pass the mark on the side of the compass indicated by the name.

A cardinal mark may denote the branching of a fairway.

**Cardinal marks are characterized by:**

Table 3. North

Attribute	Appearance
Colour	Black over yellow
Top mark	Two black cones. Tips pointing up
Light colour (i finstalled)	White
Light character	VQ, Q
Retroreflecting material	One blue on the black section and one yellow on the yellow section



Table 4. East

Attribute	Appearance
Colour	Black with yellow band
Top mark	Two black cones. Base to base
Light colour (i finstalled)	White
Light character	VQ(3) 5s, Q(3) 10s
Retroreflecting material	Two blue on the upper black section



Table 5. South

Attribute	Appearance
Colour	Yellow over black
Top mark	Two black cones. Tips pointing down
Light colour (i finstalled)	White
Light character	VQ(6)+LF1 10s, Q(6)+LF1 15s
Retroreflecting material	One yellow on the yellow section and one blue on the black section



Table 6. West

Attribute	Appearance
Colour	Yellow with black band
Top mark	Two black cones. Tip to tip
Light colour (i finstalled)	White
Light character	VQ(9) 10s, Q(9) 15s
Retroreflecting material	Two yellow on the upper yellow section



## Isolated Danger Marks

Isolated danger marks are anchored on dangers of limited extent surrounded by safe water.

**Isolated danger marks are characterized by:**

Table 7. Isolated danger mark

Attribute	Appearance
Colour	Black and red horizontal sections
Top mark	Two black spheres
Light colour (i finstalled)	White
Light character	VFI(2) 5s eller FI(2) 10s
Retroreflecting material	One blue on the upper black section and one red on the upper red section



## Safe Water Marks

Safe water marks indicate that there is safe water on all sides around the mark and is used to mark the middle of a fairway for buoyage of an approach, etc.

**Safe water marks are characterized by:**

Tabell 8. Safe water mark

Attribute	Appearance
Colour	Red and white vertical sections
Top mark	One red sphere
Light colour (i finstalled)	White
Light character	Iso, Oc, LF1 10s or Morse code "A"
Retroreflecting material	At least one red and white on the upper part of the mark arranged vertically or horizontally



## Special Marks

Special marks are not primarily intended for navigation, but indicates, for example, cable, measuring instruments or borders of an area.

**Special marks are characterized by:**

Table 9. Special mark

Attribute	Appearance
Colour	Yellow
Top mark	Yellow X (cross)
Light colour (i finstalled)	Yellow
Light character	Any. However not the same character as cardinal-, isolated danger- and safe water marks
Retroreflecting material	Yellow reflecting top mark or a yellow on the upper part of the mark



## New Dangers

A new danger must be physically marked and it is of great importance that the location of the danger is marked as soon as practicable and that this marking can be readily recognized by ships as a new hazard.

Traditionally, new dangers are generally marked by cardinal or lateral buoys or by Isolated Danger Marks, which may, if so deemed necessary, be duplicated.

However, the proliferation of Aids to Navigation in the area may make the deployment of cardinal or lateral marks difficult for mariners to quickly identify a new danger in the initial stages of an incident.

The emergency wreck-marking buoy is designed to provide high visual and radio aid to navigation recognition. It should be placed as close to the wreck as possible, or in a pattern around the wreck, and within any other marks that may be subsequently deployed.

**Emergency Wreck Marking Buoy, EWMB are characterized by:**

Table 10. Emergency Wreck Marking Buoy

Attribute	Appearance
Colour	Blue and yellow, 4-8 vertical sections
Top mark	Yellow standing upright X (cross)
Light colour (i finstalled)	Alternating blue and yellow
Light character	A1 Oc Bu Y 3s
Retroreflecting material	Yellow and blue reflectors arranged vertically on the entire mark