



RULES FOR  
CLASSIFICATION OF  
**SHIPS**

NEWBUILDINGS

SPECIAL EQUIPMENT AND SYSTEMS  
ADDITIONAL CLASS

PART 6 CHAPTER 16

# NAV-O CLASS NOTATION

JANUARY 2007

CONTENTS	PAGE
Sec. 1 General Regulations and Information .....	5
Sec. 2 Documents .....	6
Sec. 3 Bridge Configuration.....	7
Sec. 4 Bridge Equipment.....	8
Sec. 5 Requirements for Instruments and or Equipment.....	9

DET NORSKE VERITAS

Veritasveien 1, NO-1322 Høvik, Norway Tel.: +47 67 57 99 00 Fax: +47 67 57 99 11

# INTRODUCTION

## General

The present edition of the rules includes amendments and additions decided by the Board as of December 2006 and supersedes the January 2004 edition of the same chapter.

The rule changes come into force 1 January 2007.

This chapter is valid until superseded by a revised chapter. Supplements will not be issued except for an updated list of corrections presented in Pt.0 Ch.1 Sec.3. Pt.0 Ch.1 is normally revised in January and July each year.

Revised chapters will be forwarded to all subscribers to the rules. Buyers of reprints are advised to check the updated list of rule chapters printed in Pt.0 Ch.1 Sec.1 to ensure that the chapter is current.

## Main changes

### • General

- The main structure of this chapter has been left unchanged. Some of the text has been removed or amended in order to clarify the requirements, such as:
  - the previous limitation that the **NAV-O** notation can only be given to vessels constructed before 1 July 2002 has been removed
  - requirements for added documentation to be submitted for information have been included.

## Corrections and Clarifications

In addition to the above stated rule requirements, a number of corrections and clarifications have been made in the existing rule text.

Comments to the rules may be sent by e-mail to [rules@dnv.com](mailto:rules@dnv.com)

For subscription orders or information about subscription terms, please use [distribution@dnv.com](mailto:distribution@dnv.com)

Comprehensive information about DNV and the Society's services is found at the Web site <http://www.dnv.com>

© Det Norske Veritas

Computer Typesetting (Adobe FrameMaker) by Det Norske Veritas

Printed in Norway

## CONTENTS

<b>SEC. 1 GENERAL REGULATIONS AND INFORMATION .....</b>	<b>5</b>	<b>B. Field of Vision and Structural Arrangements .....</b>	<b>7</b>
<b>A. Application.....</b>	<b>5</b>	B 100 Field of vision and structural arrangements.....	7
A 100 General .....	5	<b>SEC. 4 BRIDGE EQUIPMENT .....</b>	<b>8</b>
<b>B. Scope.....</b>	<b>5</b>	<b>A. General.....</b>	<b>8</b>
B 100 Summary .....	5	A 100 General .....	8
B 200 Equivalent equipment .....	5	<b>B. Equipment.....</b>	<b>8</b>
B 300 Exemptions .....	5	B 100 Equipment to be provided.....	8
<b>C. Definitions.....</b>	<b>5</b>	<b>SEC. 5 REQUIREMENTS FOR INSTRUMENTS AND OR EQUIPMENT .....</b>	<b>9</b>
C 100 Terms .....	5	<b>A. General.....</b>	<b>9</b>
<b>SEC. 2 DOCUMENTS .....</b>	<b>6</b>	A 100 General .....	9
<b>A. Document for Information .....</b>	<b>6</b>	<b>B. Monitoring Systems and or Alarms.....</b>	<b>9</b>
A 100 Document to be submitted for information.....	6	B 100 Monitoring systems and or alarms.....	9
<b>SEC. 3 BRIDGE CONFIGURATION .....</b>	<b>7</b>		
<b>A. Workstations.....</b>	<b>7</b>		
A 100 Workstations .....	7		



## SECTION 1 GENERAL REGULATIONS AND INFORMATION

### A. Application

#### A 100 General

**101** The optional class notation **NAV-O** may be given to ships being transferred to DNV, when holding an equivalent class notation from the “losing society”.

### B. Scope

#### B 100 Summary

**101** This chapter comprises the minimum technical requirements for bridge design and console arrangements.

#### B 200 Equivalent equipment

**201** Other technical equipment and systems not mentioned in these rules may be used provided they have been accepted as being equivalent.

#### B 300 Exemptions

**301** Whenever a small vessel or a vessel of special construction cannot comply fully with these requirements due to structural restrictions, any requirements not complied with shall be compensated for by appropriate means.

### C. Definitions

#### C 100 Terms

For this chapter only, the following definitions apply.

**101** *Navigating and manoeuvring workstation.* Main workstation for ship command with optimum visibility and integrated presentation of information and operating equipment. It shall be possible from this position to operate the ship efficiently, in particular when a fast sequence of action is required.

**102** *Monitoring workstation.* Workstation from where equipment and environment can be monitored.

**103** *Bridge.* The area from which the vessel is navigated, controlled and operated, including wheelhouse and bridge wings.

**104** *Field of vision.* Angular size of the scene that can be observed from a position on the ship's bridge.

**105** *Bridge wings.* Those parts of the bridge on both sides of the wheelhouse which in general extend to the ship's side.

**106** *Wheelhouse.* Enclosed area of the bridge.

**107** *Watch alarm system.* System which monitors and alarms lack of watch-monitoring awareness.

**108** *Officer of the watch.* Person responsible for safe navigating, operating of bridge equipment and manoeuvring of the ship.

## **SECTION 2 DOCUMENTS**

### **A. Document for Information**

#### **A 100 Document to be submitted for information**

**101** A copy of the class certificate from the “losing society” shall be submitted for information.

**102** A copy of a wheelhouse arrangement drawing showing the location of workstations in the wheelhouse shall be submitted for information.

**103** A copy of a field of vision drawing showing the field of vision from the workstations shall be submitted for information.

## SECTION 3 BRIDGE CONFIGURATION

### A. Workstations

#### A 100 Workstations

**101** These requirements apply to the navigating and manoeuvring workstation and the monitoring workstation.

**102** The requirements and guidelines of ISO 8468 for the helmsman's workstation, the bridge wing workstation, the chart table and documentation workstation, the safety workstation and the radio communication workstation are recommended.

**103** A combination of workstations is permitted.

**104** At each workstation all information shall be displayed and all units and appliances shall be installed that are necessary for the safe performance of all functions and activities occurring there.

**105** The navigating and manoeuvring workstation shall be planned, designed and placed to allow efficient bridge operation. If the navigating and manoeuvring workstation and the monitoring workstation are combined as one, there shall be space for two operators.

**104** No blind sector caused by cargo, cargo gear or other obstructions outside of the wheelhouse forward of the beam that obstructs the view of the sea surface as seen from the navigating and manoeuvring workstation and the monitoring workstation, shall exceed  $10^\circ$ . The total arc of blind sectors shall not exceed  $20^\circ$ . The clear sectors between blind sectors shall be at least  $5^\circ$ . However, in the view described in 102 each individual blind sector shall not exceed  $5^\circ$ .

**105** The height of the lower edge of the front windows above the deck surface shall not be more than 1 000 mm.

**106** The minimum height of the upper edge of the front windows above the deck surface shall be at least 2 000 mm.

**107** Divisions between windows shall be kept to a minimum. No division shall be installed immediately forward of any workstation, including the centre-line.

**108** Windows especially those in front of the navigating and manoeuvring workstations and the monitoring workstations shall be as wide as possible.

**109** All bridge front windows through which the officer of the watch looks from the navigating and manoeuvring workstation and the monitoring workstation shall be inclined from the vertical plane top out, at an angle of not less than  $15^\circ$  and not more than  $25^\circ$ , to avoid reflections.

**110** The use of polarized or tinted glass is not permitted.

**111** The bridge front windows shall be provided with efficient cleaning, de-icing and demisting systems.

**112** A sufficient number of sun screens with minimum colour distortion shall be provided at forward, side and aft facing windows. Such screens shall be readily removable and not permanently installed.

**113** Every effort shall be made to allow a clear route across the wheelhouse from bridge wing to bridge wing. The width of the passageway shall be at least 1 200 mm.

**114** The clear height between the bridge deck surface covering and the underside of the deck head beams shall be at least 2.25 m. The lower edge of deck head mounted equipment shall be at least 2.10 m above the deck in open areas, passageways and at standing workstations.

**115** Toilet facilities shall be provided on the bridge or adjacent to the bridge.

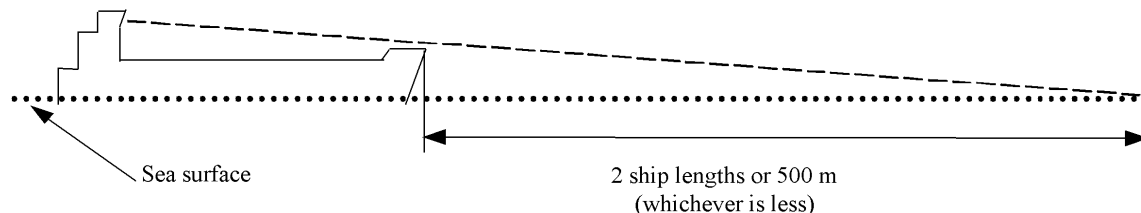
### B. Field of Vision and Structural Arrangements

#### B 100 Field of vision and structural arrangements

**101** Every effort shall be made to place the bridge above all other superstructures.

**102** The view of the sea surface from the navigating and manoeuvring workstation and the monitoring workstation shall not be obscured by more than two ship lengths, or 500 m, whichever is the less, forward of the bow to  $10^\circ$  on either side under all conditions of draught, trim and deck cargo, e.g. containers (see Fig.1).

**103** The horizontal field of vision from the navigating and manoeuvring workstation and the monitoring workstation shall extend over an arc of not less than  $225^\circ$ , that is from right ahead to not less than  $22.5^\circ$  abaft the beam on either side of the ship.



**Fig. 1**  
**Forward view**

## SECTION 4 BRIDGE EQUIPMENT

### A. General

#### A 100 General

**101** Ships shall be equipped in accordance with SOLAS 1974 Chapter V, as applicable.

**102** The equipment and or their operating devices and control elements, listed under B, shall be fitted so as to be easily accessible and within the range of the navigating, manoeuvring and monitoring workstation(s). The listed indicators and alarms shall be capable of being seen, i. e. viewable and or visible.

### B. Equipment

#### B 100 Equipment to be provided

##### **101** *Navigating and manoeuvring workstation*

The following equipment shall be provided and be readily accessible to the officer of the watch:

- a) Radar display
- b) Automatic radar plotting aid, ARPA
- c) Heading control or track control system with override
- d) Steering selector switch for steering gear
- e) Rudder pump selector switch for steering gear
- f) Call system for master and navigation officers (telephone and or internal communication system)
- g) VHF equipment (external communication)
- h) Acknowledge push button for watch alarm system
- i) Control of whistle
- j) Control of general alarm
- k) Control of window wipe and wash installation
- l) Control of console lighting
- m) Remote control of main engine(s), including emergency manoeuvring
- n) Emergency stop main engine(s).

The following additional equipment shall be provided near the navigating and manoeuvring workstation:

- a) Indicator for:
  - gyro compass heading
  - rate-of-turn (for ships > 100 000 gross tonnage)
  - rudder angle
  - propeller revolutions
  - propeller pitch
  - speed log
  - echo sounder depth

- magnetic compass heading
- electronic position-fixing system
- ship's time
- sound reception device, if applicable.

- b) Whistle control system
- c) Control and monitoring of navigational lights
- d) Navigational equipment status indication and alarms
- e) Fire alarms
- f) Alarms of further safety systems, if applicable
- g) Daylight signalling lamp
- h) Emergency stop of installations to be stopped in case of fire
- i) Remote control and monitoring of watertight doors and fire doors, if applicable
- j) Stabiliser system, if applicable.

##### **102** *Monitoring workstation*

The following equipment shall be provided and be readily accessible to the operator:

- a) Radar display
- b) Control of whistle
- c) Acknowledge push button for watch alarm system
- d) Control of window wipe and wash installation
- e) Internal communication
- f) VHF equipment (external communication)
- g) Indicator for:
  - gyro compass heading
  - rate-of-turn (for ships > 100 000 gross tonnage)
  - rudder angle
  - propeller revolutions
  - propeller pitch (if applicable)
  - speed log
  - echo sounder depth
  - ship's time.

If the monitoring workstation is designed in such a way that equipment or indication, shown under sub-items b) to g), is arranged at the navigating and manoeuvring workstation and can be reached and or observed from the monitoring workstation, then such equipment is not required to be installed in duplicate.

##### **103** *General bridge equipment*

- weather fax
- control of wheelhouse heating and cooling
- watch alarm system
- sound reception device for external sound signals, depending on bridge design.



## SECTION 5

### REQUIREMENTS FOR INSTRUMENTS AND OR EQUIPMENT

#### A. General

##### A 100 General

**101** All appliances and systems shall be suitable for use on-board ships.

**102** The navigational and monitoring equipment fitted shall be of an approved type.

**103** Switches, keys and other operating elements shall be designed and fitted so as to ensure their safe and easy operation and to preclude confusion. The direction of motion of operating elements for manoeuvring equipment shall correspond to the direction of the effect on the ship caused by the installations controlled.

#### B. Monitoring Systems and or Alarms

##### B 100 Monitoring systems and or alarms

##### **101** *Alarms of navigational equipment and or systems*

The following alarms associated with navigational equipment, e.g. monitoring of rated values, function diminution and equipment failure, shall be integrated in one panel:

- shallow depth
- ARPA warnings of predicted targets (CPA, TCPA)
- off-course
- track-control alarms (if applicable)
- gyro compass failure.

##### **102** *Watch alarm system*

- a) A system shall be provided on the bridge to verify the

awareness of the officer of the watch. Such a system shall be based on interval checking and shall be adjustable up to intervals of 12 minutes. Acknowledge push buttons shall be located at the following positions in the bridge area:

- navigating and manoeuvring workstations
- monitoring workstation(s)
- bridge wings.

Acknowledge push buttons shall only be located at bridge positions enabling proper look-out.

- b) Changing and or adjusting of the time intervals, including any facility to switch-off the watch alarm system, shall be protected against unauthorized access.
- c) Alarm suppression by persistent pressing of the acknowledge push button shall not be permitted.
- d) Power supply failure in the watch alarm system shall be indicated by an alarm.
- e) In the event that the acknowledge push button is not pressed within the set time interval, then an alarm shall sound on the bridge and if not observed within 30 seconds, the alarm shall be transferred to the mess rooms and other public rooms, and to the quarters of the master and an appointed back-up navigator.

##### **103** *Master and navigation officers' call-system*

A call-system shall be fitted by which master and navigation officers can be summoned in their accommodation and public rooms from the navigating and manoeuvring workstation. This call-system may be the general telephone, the internal communication system and or the public address system. The call-system shall be provided with priority control on the bridge.

