

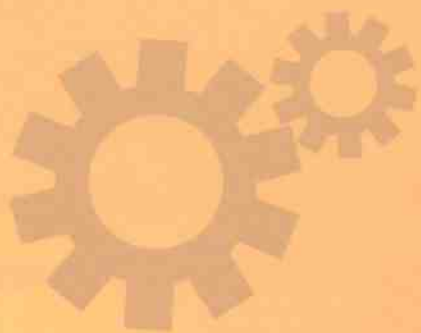


# 船舶修理英语

ENGLISH FOR SHIP REPAIR

王占礼 吴万千 刘 宁 主编

王兴如 主审



中国水利水电出版社  
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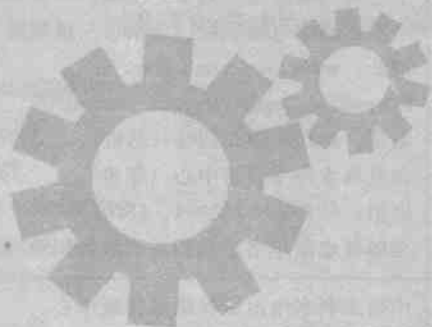
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## 内 容 提 要

本书是为船舶工程技术专业师生编写的专业英语阅读教材,也可供修船业内从事生产、管理的技术人员英语培训使用。全书由船体、船机、船舶修理规范、附录四部分组成,对船体基本结构和维修、船机构造和原理、修船标准及规范等进行了介绍,基本上涵盖了修船业务主要功能块。读者可以通过学习本书熟练掌握常用修船英语术语和文体,提高专业英语交流能力。

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# 前 言

本书是根据青岛远洋船员学院船舶工程技术专业教学大纲的要求,并结合中远船务工程集团有限公司船舶修理工作实际而编写的专业英语阅读教材。全书由船体、船机、船舶修理规范、附录四部分组成,对船体基本结构和维修、船机构造、原理和修船标准及规范等进行了介绍,内容上涵盖了修船主要业务。

本书力求兼顾课堂教学之系统性与企业培训之实用性。每课选材典型,覆盖面广。但限于篇幅,有些内容无法纳入课文部分,则以阅读材料辅之;课文和阅读材料都未涵盖,而又属修船常用语的,则在附录的“常用词汇和短语”中列出;练习部分不仅可以强化所学内容,也是对课文内容的补充和延伸。

书中术语翻译以国标为准,如国标未列入,则参照中远船务工程集团有限公司企业标准。为方便读者,有些术语采用了括号内加注“行话”处理。如, gasket 垫圈(床垫)。有些术语实在查不到现成翻译,笔者斗胆硬译了出来,如, snap connector, 译为:快动接头。不当之处敬请方家斧正!

本书定位于中级英语水平读者。建议船舶修理专业英语的初学者按本书顺序先学习本书前两部分“船体”和“船机”,积累一定量的专业词汇后,再学习“船舶修理规范”;而对于工作繁忙的船厂读者,建议直接学习船舶修理规范部分。

王占礼编写船舶修理规范、附录和部分船体、船机练习;江圆、陈朝霞、张光波、陈蓓编写船体部分;吴万千、刘宁、姜向东、王春、刘蓓编写船机部分。全书由青岛远洋船员学院王占礼副教授统稿。承蒙中远船务工程集团有限公司总经理王兴如主审。

本书在编写过程中得到了很多业内专家的指导和帮助。特别感谢张铎副教

授、崔向东副教授、刘运新副教授、何昌伟副教授、卢永然老师、郑振豪老师、于永妍老师审阅了本书的初稿。中远船务工程集团有限公司为本书提供了大量资料，并在修船业务上给予了指导，在此谨表谢意。青岛远洋船员学院副院长周明顺始终对本书的编写给予关怀和支持，谨表敬意和谢忱。

由于教材内容广泛，时间仓促，编者水平所限，不当之处在所难免，敬请读者批评指正！

《船舶修理英语》编写组

2008年10月

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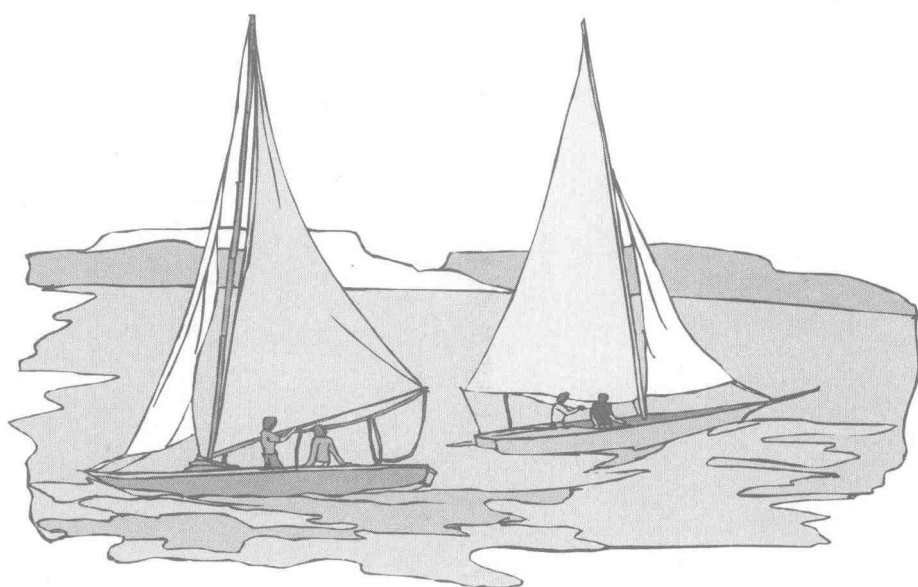
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# Part One

## Hull Construction

### 船 体





# Lesson 1 Decks and Hatches

## 甲板与舱口（盖）

Text
------

### Decks

Decks at different levels in a ship serve various functions; they may be either watertight decks, strength decks, or simply cargo and passenger accommodation decks. Watertight decks are fitted to maintain the integrity of the main watertight hull and the most important is the freeboard deck which is the uppermost deck having permanent means of closing all openings in the exposed portions of that deck. Although all decks contribute to some extent to the strength of the ship, the most important is that which forms the upper flange of the main hull girder, called the 'strength deck'. Lighter decks which are not watertight may be fitted to provide platforms for passenger accommodation and permit more flexible cargo loading arrangements. In general cargo ships these lighter decks form tweens which provide spaces in which goods may be stowed without their being crushed by a large amount of other cargo stowed above them.

To permit loading and discharging of cargo, openings must be cut in the decks, and these may be closed by non-watertight or watertight hatches. Other openings are required for personal access through the decks; and in way of the machinery space casing openings are provided which allow the removal of machinery items when necessary, and also provide light and air to this place. These openings are protected by houses or superstructures, which are extended to provide accommodation and navigating space. Forward and aft on the uppermost continuous deck a forecastle and often a poop may be provided to protect the ends of the ship at sea.

### Decks

The weather decks of ships are cambered, the camber being parabolic or straight. There may be advantages in fitting horizontal decks in some ships, particularly if containers are carried and regular cross-sections are desired. Short lengths of internal deck or flats are as a rule horizontal.

Decks are arranged in plate panels with transverse or longitudinal stiffening, and local

stiffening in way of any openings. Longitudinal deck girders may support the transverse framing, and deep transverse the longitudinal framing (see Fig. 1.1).

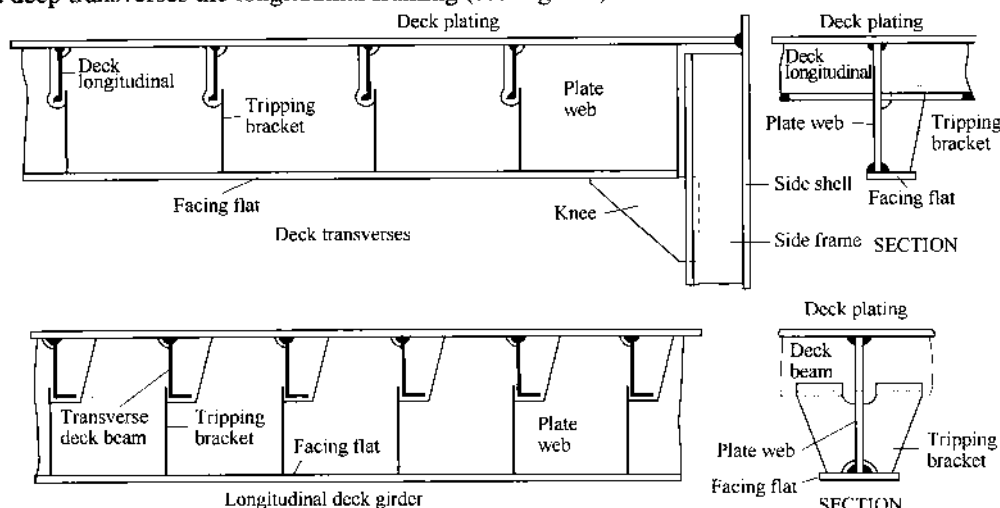


Fig.1.1 Deck supports

### Deck plating

The heaviest deck plating will be found abreast the hatch openings of the strength deck. Plating which lies within the line of the hatch openings contributes little to the longitudinal strength of the deck and it is therefore appreciably lighter. As the greatest longitudinal bending stresses will occur over the midship region, the greatest deck plate thickness is maintained over 40 percent of the length amidships, and it tapers to a minimum thickness permitted at the ends of the ship. Locally the plating thickness may be increased where higher stresses occur owing to discontinuities in the structure or concentrated loads.

Other thickness increases may occur where large deck loads are carried, where fork lift trucks or other wheeled vehicles are to be used, and in way of deep tanks. Where the strength deck plating exceeds 30mm it is to be Grade B steel and if it exceeds 40mm Grade D over the amidships region, at the ends of the superstructure and in way of the cargo hold region in container ships. The stringer plate (i.e. the strake of deck plating adjacent to the sheer strake) of ships less than 260m in length is of Grade B steel if the thickness is more than 15mm, Grade D if more than 25mm thickness over the amidships region and within the cargo hold region of container ships. Where the steel deck temperatures fall below 0°C in refrigerated cargo ships the steel will be of Grade B, D and E depending on thickness.

On decks other than the strength deck the variation in plate thickness is similar, but lighter scantlings are in use.

Weather decks may be covered with wood sheathing or an approved composition, which not only improves their appearance, but also provides protection from heat in way of any accommodation. Since this provides some additional strength, reductions in the deck plate thickness are permitted; and on superstructure decks the plating thickness may be further decreased

within deckhouses, if sheathed, before fitting any form of sheathing the deck is treated to prevent corrosion between the deck plating and sheathing.

Any openings abreast the hatch opening in a deck are kept to a minimum and clear of the hatch corners, if such openings are cut, compensation is required to restore the sectional area of deck. All large openings in the decks have well-rounded corner, with insert plates fitted, unless the corners are parabolic or elliptical with the major axis fore and aft, local stress concentrations being reduced if the later type of corner is cut (see Fig. 1.3).

### **Deck stiffening**

Decks may be framed transversely or longitudinally but outside the line of openings it is preferred that longitudinal framing should be adopted for the strength deck.

When the decks are longitudinally framed the scantlings of the longitudinal are dependent on their spacing, the length of ship, whether they are inside or outside the line of hatch openings, their span and the deck loading. Deck transverses support the longitudinal, and these are built from a deep web plate with flange or welded face flat, and are bracketed to the side frame (see Fig. 1.1). Within the forward 7.5 percent of the ship's length, the forecastle and weather deck transverses are closely spaced and the longitudinal scantlings increased, the additional transverse and longitudinal stiffening forward being designed to avoid buckling of the deck plating on impact when shipping seas.

Transversely framed decks are fitted with deck beams at every frame, and these have scantlings which are dependent on their span, spacing, and location in the ship. Those fitted right forward on weather decks, like the longitudinal framing forward, have heavier scantlings, and the frame spacing is also decreased in this region so they will be closer together. Beams fitted in way of deep tanks, peak tanks, and oil bunkers may also have increased scantlings as they are required to have the same rigidity as the stiffeners of the tank boundary bulkheads. Deck beams are supported by longitudinal deck girders which have similar scantlings to deck transverses fitted with any longitudinal framing. Within the forward 7.5 percent of the ship's length these deck girders are more closely spaced on the forecastle and weather decks. Elsewhere the spacing is arranged to suit the deck loads carried and the pillar arrangements adopted, each beam is connected to the frame by a 'beam knee' and abreast the hatches 'half beams' are fitted with a suitable supporting connection at the hatch side girder (see Fig. 1.2).

Both longitudinal and deck beam scantlings are increased in way of cargo decks where forklift trucks, and other wheeled vehicles which cause large point loads, are used.

In ways of the hatches fore and aft side girders are fitted to support the inboard ends of the half beams, and transverses. At the ends of the hatches heavy transverse beams are fitted and these may be connected at the intersection with the hatch side girder by horizontal gusset plates. Where the deck plating extends inside the coamings of hatches amidships the side coaming is extended in the form of tapered brackets.

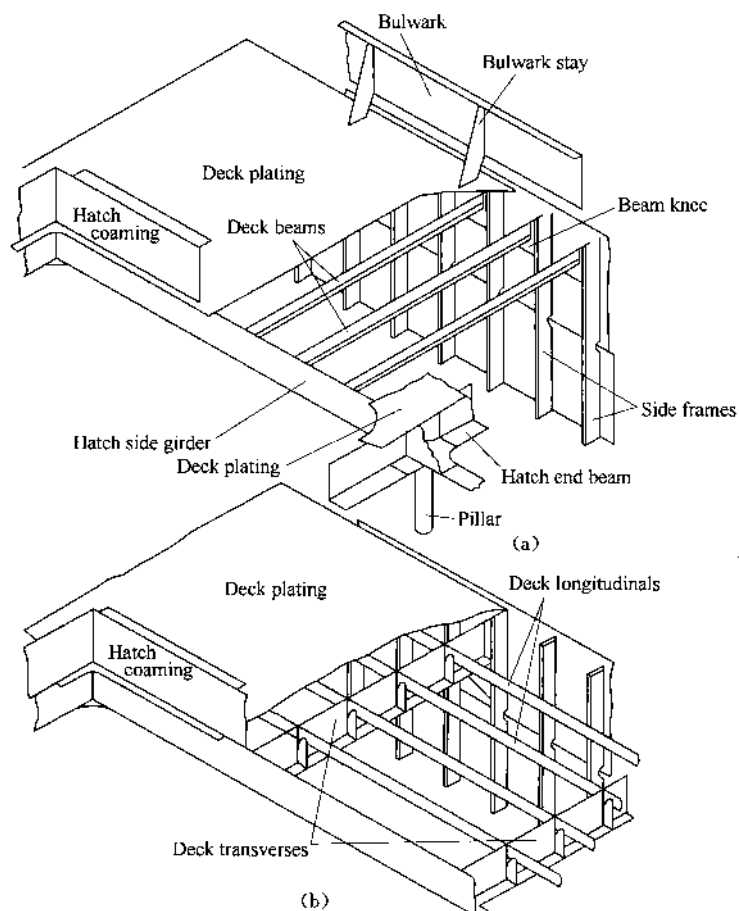


Fig.1.2 Deck construction

(a) Transversely framed deck; (b) Longitudinally framed deck

## Words

abreast	[ə'breɪst]	ad.	并列，与……相齐
appreciable	[ə'pri:ʃiəbl]	a.	看得出的；明显的
bracket	['brækit]	n.	肘板
buckling	['bʌklɪŋ]	n.	弯曲，翘曲
camber	['kæmbə]	n.	梁拱
flange	[flændʒ]	n.	折边
forecastle	['fəʊksl]	n.	艏楼
girder	['gɜ:də]	n.	纵桁
integrity	[in'tegriti]	n.	完整，完整性
parabolic	[pærə'bɒlik]	a.	抛物线的
poop	[pu:p]	n.	艉楼
scantlings	['skæntlɪŋ]	n.	船材尺度
sheathing	['ʃi:ðɪŋ]	n.	覆材

stiffener ['stifnə] *n.* 加强筋, 防挠材, 扶强材

### Phrases and Expressions

beam knee	梁肘板
half beam	半梁
accommodation deck	起居甲板, 舱室甲板
adjacent to	邻近的, 接近的
machinery space casing	机舱棚
deep web plate	深腹板
freeboard deck	干舷甲板
gusset plate	扣板
in way of	在……处
insert plate	嵌补板
sheer strake	舷顶列板
strength deck	强力甲板
stringer plate	甲板边板
watertight deck	水密甲板
weather deck	露天甲板
frame spacing	肋距

### Exercises

#### I. Reading Comprehension

##### 1. Answer the following questions according to the text.

- 1) How can the decks be classified in the text? List 4 types of decks.
- 2) What deck is the most important in maintaining the integrity of the main watertight hull?
- 3) What purposes does the lighter deck serve?
- 4) What shape are weather decks in?
- 5) How does the thickness of deck plating vary in different parts of a ship?
- 6) How may the decks be framed?
- 7) Compare the longitudinally and transversely framed decks.

##### 2. Choose the best answer to complete the following sentences according to the text.

- 1) Decks, serving different functions, may be of \_\_\_\_\_.  
 A. watertight decks  
 B. strength decks  
 C. cargo decks and accommodation decks  
 D. all of the above
- 2) The freeboard deck \_\_\_\_\_.  
 A. is one of watertight decks  
 B. is uppermost among the watertight deck  
 C. has permanent means of closing all openings in the exposed portions of that deck  
 D. all of the above

- 3) The lighter deck may be of \_\_\_\_\_.  
A. weather deck  
B. tween deck  
C. freeboard deck  
D. strength deck
- 4) \_\_\_\_\_ does not contribute to the strength of the ship.  
A. Freeboard deck  
B. Strength deck  
C. Lighter deck  
D. None of the above
- 5) Openings in the decks may serve the purpose of \_\_\_\_\_.  
A. loading and unloading cargo  
B. personal access  
C. machinery removal, light and ventilation  
D. all of the above
- 6) The thickest deck plates \_\_\_\_\_.  
A. extend over 40 percent of the length amidship region  
B. are arranged at the ends of the ship  
C. lie within the line of the hatch openings  
D. are lighter scantlings
- 7) Sheathing does not serve to \_\_\_\_\_.  
A. provide heat insulation  
B. improve the deck appearance  
C. provide some additional strength  
D. prevent the deck plates corrosion
- 8) Any openings abreast the hatch opening in a deck \_\_\_\_\_.  
A. are kept to a minimum  
B. are clear of the hatch corners  
C. are fitted with insert plates if necessary  
D. all of the above
- 9) With decks being longitudinally framed the scantlings of the longitudinal are dependent on \_\_\_\_\_.  
A. their spacing  
B. the length of ship  
C. whether they are inside or outside the line of hatch openings, their span and the deck loading  
D. all of above

## II. Word Study

### 1. Complete the sentences with the words and phrases given below in their proper forms.

flange sheathing scuttle camber stringer strake

- 1) \_\_\_\_\_ is a part of a plate or shape bent at right angles to the main part.
- 2) \_\_\_\_\_ is the first covering of boards on the outside wall of a frame house or on a timber roof; also, the material used for covering; ceiling boards in general.
- 3) \_\_\_\_\_ is a small opening in a deck or elsewhere, usually fitted with a cover or lid or a door for access to a compartment.
- 4) A \_\_\_\_\_ is a slightly arched surface, as of a road, a ship's deck, an airfoil, or a snow ski.
- 5) \_\_\_\_\_ is the outside strake of deck plating.

### 2. Match the following words with their explanations.

freeboard deck      the uppermost deck that is officially considered completely watertight



hatch	the dimensions of the structural parts of a vessel
scantlings	the vertical boundary structure of a hatch or skylight
coaming	an access into the compartment below a ship's deck
scupper	opening for carrying off water from a deck

### III. Translation

#### 1. Translate the following two paragraphs into Chinese.

1) Cargo door openings are to have well rounded corners, and are to be kept clear of the ends of superstructures and the deck openings outside the line of hatchways. Such openings within 0.5L amidships are to be fully compensated by insert plates.

2) The deck sheathing should have no corrosive action to steel, otherwise it is to be effectively insulated from steel by a suitable protecting covering. Where special composition is used for the substitution of wood sheathing, the thickness of the steel deck plating is not to be less than that required for unsheathed steel decks.

#### 2. Translate the following two paragraphs into English.

1) 船体结构的基本构件之一就是外板结构, 该结构确保了船只的漂浮性。外板结构十分重要, 因为恰恰是它经受了不同外力, 诸如总纵弯曲、水压力、波浪冲击、冰块挤压等。

2) 按照不同的位置, 主船体可分为艏段、舯段和艉段三个总段。按照惯例, 每个总段由船底、舷侧、甲板和隔舱壁等组成。

## Supplementary Reading

### Hatches

The basic regulations covering the construction and means of closing hatches in weathertight decks are contained within the Conditions of Assignment of Freeboard of the Load Line Rules 1968. Lloyd's Register provides formulae for determining the minimum scantlings of steel covers, which will be within the requirements of the Load Line Rules. Only the maximum permitted stresses and deflections of covers under specified loadings are given by the Load Line Rules. Under these regulations ships fitted with approved steel covers having direct securing arrangements may have reduced B-100 or B-60 freeboards if they meet the subdivision requirements, but in general they are assigned standard cargo ship Type B freeboards. If steel pontoon type covers which are self-supporting and have no direct securing arrangements are fitted, then the standard Type B freeboard only is assigned. Where portable beams are fitted with wood or light steel covers and tarpaulins, then the ship has an increased Type B freeboard, i.e. there is a draft penalty. This means that most ships are fitted exclusively with the stronger stiffened self-supporting steel covers.