



空中乘务专业教材

AIRCRAFT CABIN SYSTEMS AND EQUIPMENT

飞机客舱系统与设备

刘小娟◎主编 李玉梅◎主审

中国民航出版社

空中乘务专业教材

AIRCRAFT CABIN SYSTEMS AND EQUIPMENT

飞机客舱系统与设备

责任编辑：李婷婷
封面设计：艾博堂

ISBN 978-7-5128-0017-5



9 787512 800175 >

定价：26.00 元

空中乘务专业教材

Aircraft Cabin Systems and Equipment

飞机客舱系统与设备

刘小娟 主编

李玉梅 主审

中国民航出版社

图书在版编目 (CIP) 数据

飞机客舱系统与设备: 英汉对照/刘小娟主编. —
北京: 中国民航出版社, 2011. 4
ISBN 978-7-5128-0017-5

I. ①飞… II. ①刘… III. ①飞机-客舱-教材-英
汉 IV. ①223

中国版本图书馆 CIP 数据核字 (2011) 第 044028 号

责任编辑: 李婷婷

飞机客舱系统与设备

刘小娟 主编

出版 中国民航出版社
地址 北京市朝阳区光熙门北里甲 31 号楼 (100028)
排版 中国民航出版社照排室
印刷 北京金吉士印刷有限责任公司
发行 中国民航出版社 (010) 64297307 64290477
开本 787 × 1092 1/16
印张 10.5
字数 236 千字
版本 2011 年 4 月第 1 版 2011 年 4 月第 1 次印刷

书号 ISBN 978-7-5128-0017-5
定价 26.00 元

(如有印装错误, 本社负责调换)

前 言

近年来,随着我国经济和国内航空运输市场的迅猛发展,到中国进行商务活动和旅游的外籍乘客越来越多,机上外籍乘务员的数量也在逐渐增加。同时,日前国内航空公司所运行的绝大部分飞机属于波音和空客两大飞机制造商生产,其客舱设备大多使用英文标识,从而需要乘务员具备更高的专业英语水平。因此,航空公司如何有效提升乘务员的专业素质便成了当务之急。

在全国众多开设空中乘务专业的院校中,相关英语教材还是空白。因此,本教材的编写和出版致力于填补客舱安全服务领域与国际接轨的空白。考虑到乘务专业教学特点,本教材内容与空中乘务员岗位要求紧密结合,主要包括国内航空公司单通道主流机型即波音新一代 737 系列和空客 320 系列。由于各航空公司在机型订购时要求不统一,客舱里的内部设施、应急设备的数量和位置也会有所不同,编者在收集了大量的乘务员机型操作手册的基础上突出共性,避免差异性。学生通过本教材的学习既能掌握这两种机型的性能、客舱布局、客舱主要系统和设施,使他们在航空公司培训和工作中能很快适应岗位要求,同时还能在专业英语方面得到有效的训练。在实际工作中,学生若要有效吸收和借鉴国外航空公司有关客舱安全和客舱管理的最新信息,其自身需要具备良好的专业知识和较强的专业英语水平,只有这样,他们才能不断地实践中开辟广阔的职业发展空间。

为了使学生对《飞机客舱系统与设备》知识更直观地了解和掌握,教材中配有大量插图,并且每课还附有四个练习题供学生课后复习,这些练习题是对各课重点和难点的归纳。

本教材在编写过程中得到了国内各大航空公司客舱部以及中国民航大学乘务学院“飞机客舱系统与设备”课程组林虹、赵玉秋、王爱国、刘雪莹、孙重凯等老师的大力支持和帮助,本教材由李玉梅教授审阅,在此一并表示衷心的感谢。

由于编写时间有限,教材中难免出现一些错误和疏漏,望读者和专家不吝赐教。

编 者

2011 年 1 月

Contents

Part One Boeing 737-700	1
Preface History of Boeing Commercial Aircraft	1
Lesson 1 Airplane Description	4
Lesson 2 Flight Attendant Panels and Lighting System	14
Lesson 3 Communication Systems	22
Lesson 4 Lavatories and Galleys	29
Lesson 5 Doors, Emergency Exits and Forward Airstairs	38
Lesson 6 Emergency Equipment	48
Lesson 7 Emergency Situations and Emergency Evacuation	59
Lesson 8 The Next-Generation 737 Family	69
 Part Two Airbus 320	 77
Preface History of Airbus Commercial Aircraft	77
Lesson 9 Aircraft General	81
Lesson 10 Cabin Systems (I)	92
Lesson 11 Cabin Systems (II)	102
Lesson 12 Emergency Equipment and Evacuation	114
Lesson 13 The A320 Single Aisle Family	123
Appendix 1 Abbreviations in the Flight Attendant Manual	130
Appendix 2 Glossary	135
Appendix 3 Emergency Equipment Symbols	151
Appendix 4 Highlights of Boeing Commercial Aircraft	152
Appendix 5 Boeing and China	155
Appendix 6 Highlights of Airbus Commercial Aircraft	157
Appendix 7 Airbus and China	160

Part One Boeing 737-700

Preface History of Boeing Commercial Aircraft

In 1903, two events launched the history of modern aviation. On December 18th, 1903, the Wright brothers made the first powered flight at Kitty Hawk, North Carolina, and William Boeing, born on Oct. 1, 1881, in Detroit, Michigan, left Yale Engineering College for the West Coast of the United States.

In 1910 William Boeing bought Heath's shipyard on the Duwamish River, just outside Seattle. Heath's shipyard became Boeing's first airplane factory. In the early years of airplane manufacture, Boeing established a high reputation for sea planes. These aircraft were mainly used for carrying mail across the United States and Canada. Boeing developed many other types of aircraft both for the military as well as for the fledgling (年轻而无经验的) passenger air service business. The peak of sea plane development was the introduction of the Boeing 314A, called the Clipper. It was the largest passenger flying boat ever to be introduced into passenger service and for the first time opened up a sensible air service across the Pacific and North Atlantic, combining safety, comfort and performance.

In 1939, Clipper services were introduced from San Francisco across the Pacific to Hong Kong and then to Shanghai.

At the end of World War II, Boeing made use of their technology in producing high volumes of large bombers, the Super Fortress, as their newly found experience of Jet engines and designed and developed a four-jet-engine fuel tanker called the KC135A. It first flew and went into service with the US air force in 1954. Following on from this design, came the first high volume jet airliner, Boeing 707. It first flew in 1963 and went into service with Pan-Am in 1965. This aircraft established standards of comfort, service and speed. There were 1 010 manufactured until production came to an end in 1991.

Following very closely after the service introduction of the 707 came the 727. This airplane was designed for short to medium frequent operations. It had three engines installed in the tail of the airplane. It first flew in 1963 and entered service in 1965. Until production stopped in 1984, there were 1 831 airplanes manufactured.

In 1967, it was time for the two-engine Boeing 737-200 to make its appearance on the world stage. It was designed for short haul frequent airline operations and in order to save production time, it used the same fuselage sections as the 707 and 727. The aircraft has been continually developed, in both passenger size and engine size. In 1998, the Next-Generation of B737 families (737-600/-700/-800) came in service, and the latest model, Boeing 737-900, entered service in 2001. From 2002 to 2010, Boeing Company has received more than 3 400 orders from different airlines. By May 2010, more than 8 000 Boeing 737 of all series have been in service all over the world.

The first flight of 747 was in 1969. It went into service with Pan-Am on the New York — London routes. It was an immediate success with both airlines and passengers. Every airline had to have 747's in their fleet. In the first ten years of operation, more than 500 airplanes were delivered at a rate of one every week. Over the last 35 years it has grown in passenger size and range and in 2004 it was still the largest aircraft in the world. It remained so until the first flight of the Airbus 380 in 2005. As with all the airplanes in the Boeing family, the airplane has been constantly developed in size, range and economy. Boeing has built 15 different 747 models over the years, and has delivered more than 1 380 747's. The largest and most cost-effective (划算的) version, the first 747-400 was delivered in 1989 and was still in production in passenger and freight versions in 2004. Officially announced in 2005, the 747-8 is the fourth-generation Boeing 747 version, with lengthened fuselage, redesigned wings and improved efficiency. The 747-8 is the largest 747 version and the largest commercial aircraft built in the United States, as well as the longest passenger aircraft in the world. The 747-8 first flew on February 8, 2010. Delivery of the first 747-8 freighter has been postponed multiple times and is now expected in mid-

2011.

In 1981, the first member of the Boeing 767 family made its first flight. The 767 has become a complete family of airplanes in the 200 ~ 300 seat market. The family includes three passenger models: the 767-200ER in service in 1984, 767-300ER in service in 1988, and 767-400ER in service in 2000. It is a twin aisled, wide bodied airplane with two engines.

In 1982, the Boeing 757-200, a short-to-medium range airliner, made its first flight. It combined advanced technology for exceptional fuel efficiency, low noise levels, increased passenger comfort and excellent operating performance. The 757-200 and twin-aisle 767 were developed at the same time, so that both share the same technological advancements in propulsion (推力), aerodynamics (空气动力学), avionics and materials. This commonality (共性) reduces training and spares (备件) requirements when both airplanes are operated in the same fleet. When the production line for the 757 closed in 2004, more than 1 000 airplanes had been built.

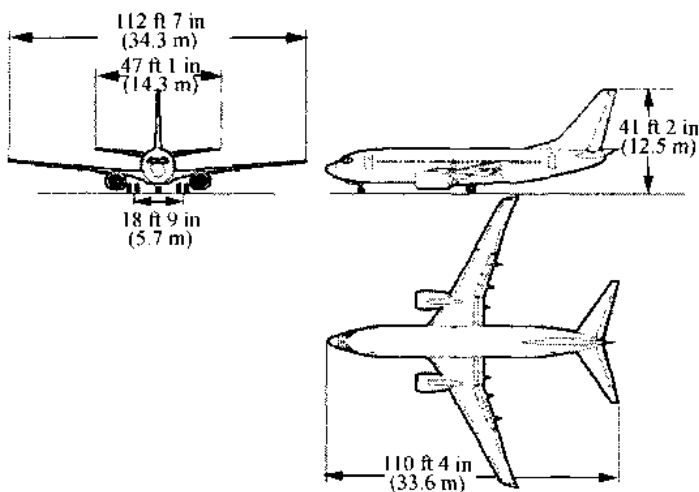
In 1995, the first of a new family of airplanes entered services with United Airlines. This was the Boeing 777-200, a wide bodied, twin aisled, twin-engined large long haul airplane. It was larger in size than the largest of the Boeing 767, but smaller than the 747-400. It brings to the airline the economics advantages of a twin-engined airplane with medium-to-long range passenger markets. The airplane was designed and developed in association with airline customers. It was designed to meet the increasing expectations of customers in the 21st century. From the technological aspect, it was the first airplane to be designed 100% by computer. The Boeing 777 is the flagship (旗舰) of airlines worldwide with its industry-leading reliability, unmatched (无比的) twin-engine performance and spacious (宽敞的) cabin. The 777 offers ample (宽敞的) cabin space and various interior configurations make it the preferred plane for passengers in every class. Three-class seating in the passenger versions ranges from 301 to 368.

The Boeing 787 Dreamliner is the family of new, super-efficient airplanes that brings big-jet comfort and economics to the midsize market. The 787 incorporates advanced composite (合成的) materials, systems and engines to provide unprecedented (空前的) performance levels, including a 20% improvement in fuel efficiency over existing small twin-aisle airplanes. The 787-8 and larger 787-9 will serve the 200- to 300-seat market on flights as long as 8 500 nautical miles (海里) (15 750 km) in three-class seating. A third family member, the 787-3, will hold up to 330 passengers in two-class seating and will be optimized (最优化) for routes of 3 050 nautical miles (5 650 km). The first 787 made its first flight in December 2009. The first delivery was scheduled for the fourth quarter of 2010.

Lesson 1 Airplane Description

General Information

The 737-700 is a short-to-medium range airplane. It is based on a key Boeing philosophy of delivering added value to airlines with reliability, simplicity and reduced operating and maintenance costs. The length from the nose to the tail is 33.60 meters; the width between the two wings (wingspan) is 34.30 meters; the interior cabin width is 3.53 meters. On the ground the height from the top of the tail plane to the ground is 12.50 meters, and the distance between the doorsill of the forward cabin doors to the ground is 2.67 meters and the



Principal Dimensions

aft is 2.92 meters. It is powered by two new CFM56-7 engines which offer lower fuel burn and lower engine maintenance costs. They are mounted under and forward of the wings. Each engine develops nearly 24 000 pounds of thrust, depending on the specific aircraft type, which is more than enough to allow a safe takeoff with the loss of one of the engines. Its maximum takeoff weight is over 60 000 or 70 000 kilograms, depending on the specific aircraft type. The maximum range is over 5 000 kilometers, and its typical cruise speed at 35 000 feet is nearly 340 knots or 629 kilometers (0.82 mach) per hour. The maximum operating altitude is 41 000 feet or 12 500 meters.

The airplane consists of three parts: the nose, the fuselage and the tail.

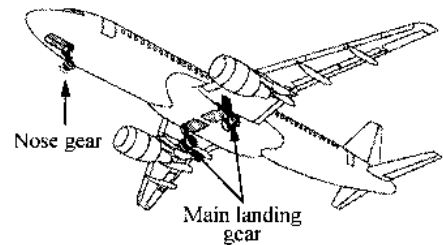
In the nose of the aircraft is the cockpit. It is the flight control center. The B737 flight deck features state-of-the-art display and digital electronic systems that allow the two crew members to function as system managers. It can hold two pilots and one observer with the pilot-in-command sitting on the left-hand position. A stowage observer's seat is installed

forward of the flight deck door. Directly in front of the pilot is the control column. On both sides of the pilot jumpseats are the two sliding windows, where pilots can evacuate from the cockpit in the event of emergency. The window lock lever controls their movements.

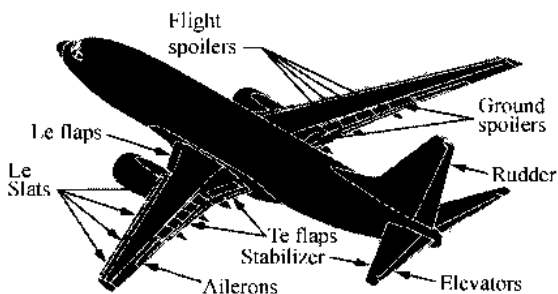
The fuselage has a circular cross section and is entirely pressurized with the exception of the nose and tail cones, the landing gear bays and air conditioning compartments. It is divided into two parts: the upper deck, which is the cabin area, and the lower deck, which is the cargo compartment. The passenger cabin is split into three zones: the forward (FWD), the mid and the aft. Normally the 737-700 is capable of carrying 126 passengers for typical two-class configuration or 149 passengers for typical one-class configuration. The designed passenger seating capacity may vary due to the different requirements by the airlines. There are four passenger seats each row in the Business Class and six seats in the Economy Class. All the seats are equipped with food trays and seat belts. They can be reclined by pressing the recline-button on the armrest, but the seats close to and forward of the overwing emergency exits do not recline.

Under the passenger cabin are the two cargo compartments. They are sealed and pressurized but do not have fresh air circulation and temperature control as the upper passenger cabin does. The usable cargo compartment volume is 1 068 cubic feet.

The landing gears are of retractable, tri-cycle type. The nose landing gears retract forward into the fuselage. The main landing gears are mounted under the wings and retract towards the center. The wings are positioned on both sides of the fuselage. They consist of slats, flaps, spoilers and ailerons. Each provides auxiliary control. There is one engine under each wing and they provide power to the airplane.



Landing Gears



Flight Control Surfaces

The tail cone consists of rudder, elevator, stabilizer and the Auxiliary Power Unit (APU). The APU is mounted in the tail of the airplane and it is a gas turbine engine that can work both in the air and on the ground. The APU can supply electrical power to operate the airplane systems on the ground if the external ground services are not available. It can also provide bleed

air for air conditioning and pressurization. In flight, the APU is capable of serving as a back-up for the engine bleed air system up to 17 000 feet.

The primary electrical power system supplies 115 volt, 400 cycle Alternating Current (AC) and 28 volt Direct Current (DC) electrical power to the airplane. If the electrical system loses one or more generators, electrical power on the galleys is removed automatically.

Normally, the air for air conditioning is supplied by the engines. Cabin temperature is controlled automatically to maintain between 18°C (65 °F) and 29°C (85 °F) selected by the pilots. Temperature can also be controlled manually to suit the needs of passengers and cabin crew. It is controlled separately for the passenger cabin and the flight deck.

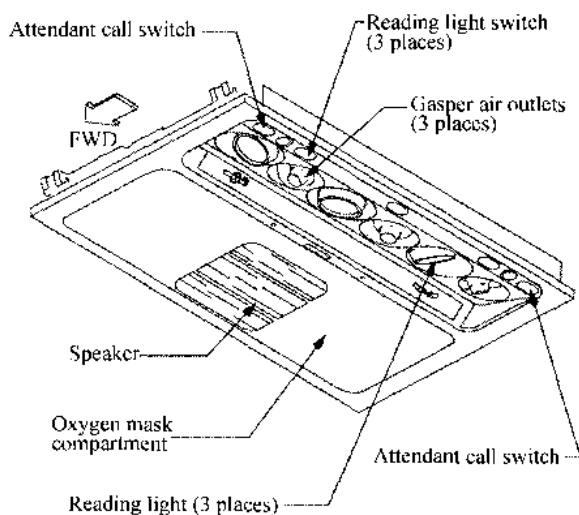
Passenger Cabin Interior

There are six exits for B737-700, four cabin doors and two overwing emergency exits. Normally, the two entry doors, located forward and aft on the left side of the airplane, are mainly for passengers boarding and disembarking. They are Door L1 and Door L2 respectively. Service doors are located on the right side of the airplane, forward and aft. They are Door R1 and Door R2 respectively. These two cabin doors are normally used for servicing by the ground crews. The four cabin doors can be opened or closed manually from inside or outside the aircraft. They can be used as exits in an emergency. The overwing emergency exits are smaller than the four cabin doors and are used for emergency only.

Generally there are five flight attendant jumpseats inside the cabin, which are located close to the cabin doors and face backward. They are pull-down types that automatically return to the stowed position when unoccupied. A combination of a seat belt, shoulder harness and a padded headrest are installed in the seat. When the airplane is moving on the ground, taking off and landing, cabin crew must secure themselves properly in their seats to avoid personal injury. Communication handsets, attendant panels and microphones are installed at the attendant stations. Emergency equipment, a work light and an attendant service unit containing oxygen masks for each attendant are installed near each attendant station.

Overhead stowage bins run the length of the cabin and stow blankets, pillows and carry-on items. Each overhead bin is 80 inches (203 centimeters) long, and its maximum weight is 160 pounds (72.5 kg), which is clearly marked on a placard. Emergency equipment such as portable oxygen cylinders, fire extinguishers and megaphones may also be stored in the bins. A new handrail on the overhead stowage bins is offered for added passenger and flight attendant convenience. The handrail provides both cabin crew and passengers support when they are loading carry-on items or moving about in the cabin.

The Passenger Service Units (PSU) are installed in the bottom of the overhead bins. Each unit has a reading light and its switch, supplemental passenger air, emergency oxygen equipment, a NO SMOKING /FASTEN SEAT BELT sign and an attendant call switch. Every other PSU has a speaker installed. There are special arrangements when there are disabled passengers on board. They must be seated in the same section, either in the forward or in the aft, but they can't sit in the mid part of the cabin because there are no floor level exits around.



Passenger Service Unit

There are two galleys in the passenger cabin so as to provide convenient and rapid service to passengers. They are generally installed in the cabin next to the forward and aft galley service doors. In general the equipment of the galley unit consists of the following main items: ovens, hot cups, water boilers, waste containers and main storage compartments. The galleys are equipped with electrical power and water services.

There are three lavatories on board, one in the forward and two in the aft. Each lavatory contains a toilet, wash basin, mirror and all the necessary vanity items and disposal units. For the convenience and comfort of passengers with some special needs, some of the lavatories are equipped with diaper changing tables and handicap provisions. Ventilation is provided and air exhausts through overboard vents.

New Words

jetliner ['dʒetˌlaɪnə]

n. 喷气客机

doorsill ['dɔːsɪl]

n. 门槛

fuel [fjuəl]

n. 燃油

maintenance ['meɪntɪnəns]

n. 维护, 保持

mount [maʊnt]

vt. 安放, 设置

thrust [θrʌst]

n. 推力

maximum ['mæksɪmə]

n. 最大量, 最大限度, 极大

altitude ['æltitju:d]

nose [nəʊz]

fuselage ['fju:zilɑ:ʒ]

cockpit ['kɒkpit]

feature ['fi:tʃə]

state-of-the-art

digital ['didʒɪtl]

stowage ['stəʊɪdʒ]

install [in'stɔ:l]

column ['kɒləm]

lever ['li:və, 'levə]

circular ['sɜ:kjulə]

bay [bei]

configuration [ken'figju'reiʃən]

tray [treɪ]

recline [ri'kleɪn]

seal [si:l]

retractable [ri'træktəbl]

circulation [ɜ:sə'kju'leɪʃən]

tri-cycle ['traɪsɪkl]

retract [ri'trækt]

slat [slæt]

flap [flæp]

spoiler [spɔɪlə]

aileron ['eɪlərən]

auxiliary [ɔ:g'zɪljəri]

rudder ['rʌdə]

elevator ['elɪveɪtə]

stabilizer ['steɪbɪlaɪzə]

external [eks'tɜ:nl]

back-up (= back up)

generator ['dʒenəreɪtə]

manually ['mænjuəli]

unoccupied ['ʌn'ɒkjupaɪd]

adj. 最高的, 最多的, 最大极限的

n. (尤指海拔) 高度

n. [空] 机头

n. [空] 机身

n. 驾驶舱

vt. 是…的特色

adj. (学科, 技术等的) 当前水平, 最新水平

adj. 数字的

n. 存储

vt. 安装, 安置

n. 柱, 柱形物

n. 手柄

adj. 圆形的

n. 分隔舱

n. 布局, 构造, 结构

n. 盘, 碟, 盘子

v. 放置

vt. 封, 密封

adj. 可收回的

n. 循环, 流通

n. 三轮

v. 缩回, 收回, 取消, 撤销

n. 缝翼

n. 襟翼

n. 扰流板

n. 副翼

adj. 辅助的, 补助的

n. 方向舵

n. 升降舵

n. 水平尾翼

adj. 外部的, 客观的

v. /n. 备份

n. 发电机, 发生器

adv. 手工地, 手动地

adj. 空闲的, 无人占领的

padded [ˈpædɪd]
 secure [siˈkjʊə]
 panel [ˈpænl]
 handset [ˈhændset]
 microphone [ˈmaɪkrəfəʊn]
 placard [ˈplækɑːd]

megaphone [ˈmegəfəʊn]
 handrail [ˈhændreɪl]
 switch [swɪtʃ]

oven [ˈʌvən]
 toilet [ˈtɔɪlɪt]
 vanity [ˈvænɪti]
 disposal [dɪsˈpəʊzəl]
 diaper [ˈdaɪəpə]
 handicap [ˈhændɪkæp]
 provision [prəˈvɪʒən]
 ventilation [ˌventɪˈleɪʃən]
 exhaust [ɪɡˈzɔːst]
 vent [vent]

adj. 加垫子的
v. 保护; 扣紧
n. 面板
n. 电话听筒, 手机, 手持机
n. 扩音器, 麦克风
n. 布告, 标牌
v. 张贴
n. 扩音器, 喇叭
n. 栏杆, 扶手
n. 开关, 电闸, 转换
vt. 转换, 转变
n. 烤箱, 烤炉
n. 厕所, 洗手间; 抽水马桶
n. 浴室里的壁橱
n. 处理, 处置
n. 尿布
v. 妨碍; 加障碍于; 使受障碍
n. 供应, (一批) 供应品
n. 通风, 流通空气
vi. 排气
n. 通风孔, 出烟孔, 出口

Technical Terms

doorsill height
 maximum takeoff weight
 maximum range
 cruise speed
 maximum operating altitude
 pilot-in-command
 flight deck
 control column
 sliding window
 tail cone
 landing gear

门槛高度
 最大起飞重量
 最大航程
 巡航速度
 最大飞行高度
 责任机长
 驾驶舱
 操纵杆
 (驾驶舱里的) 滑动窗
 尾翼
 起落架

air conditioning compartment	空调舱
cargo compartment	货舱
Business Class	公务舱, 商务舱
Economy Class	经济舱
seat belt	安全带
overwing emergency exit	翼上紧急出口
cubic foot	立方英尺
Auxiliary Power Unit (APU)	辅助动力装置
emergency equipment	应急设备
attendant service unit	乘务员服务组件
bleed air	(发动机) 引气
Alternating Current (AC)	交流电
Direct Current (DC)	直流电
shoulder harness	肩带
oxygen mask	氧气面罩
overhead stowage bin	头顶行李箱
carry-on	手提行李
portable oxygen cylinder	便携式氧气瓶; 手持式氧气瓶
fire extinguisher	灭火器
Passenger Service Unit (PSU)	旅客服务组件
floor level exit	地板高度出口
hot cup	烧水杯
water boiler	烧水器

Notes

1. The 737-700 is a short-to-medium range airplane. It is based on a key Boeing philosophy of delivering added value to airlines with reliability, simplicity and reduced operating and maintenance costs. 波音 737-700 是中短程飞机。它根植于波音的核心理念: 可靠、简捷, 且极具运营和维护成本, 为航空公司客户创造更多价值。
2. It is powered by two new CFM56-7 engines which offer lower fuel burn and lower engine maintenance costs. They are mounted under and forward of the wings. Each engine develops nearly 24 000 pounds of thrust, depending on the specific aircraft type, which is more than enough to allow a safe takeoff with the loss of one of the engines. 两台 CFM56-7 发动机为其提供动力, 这种新型发动机能降低燃油消耗和维修成本。发

动机安装在机翼下前侧。根据具体机型，每台发动机产生的推力大约为 24 000 磅，即使一台发动机失效，另一台发动机产生的推力也足够使飞机安全起飞。

注：CFM 国际公司由法国 SNECMA 公司、美国 GE 公司组成。CFM56-7 发动机的优点：噪声和污染显著降低，维护成本降低约 15%，发动机可靠性保持不变。CFM56-7 发动机主要安装在波音 737-600/-700/-800 等机型。

3. The maximum range is over 5 000 kilometers, and its typical cruise speed at 35 000 feet is nearly 340 knots or 629 kilometers (0.82 mach) per hour. 飞机的最大航程超过 5 000 公里，在 35 000 英尺高度时其典型巡航速度大约为每小时 629 公里（0.82 马赫数）。

注 1：飞机的马赫数是指飞机的飞行速度与当地大气（即一定的高度、温度和大气密度）中的音速之比。课文中的 0.82mach 表示飞机的速度为当地音速的 0.82 倍。

注 2：巡航速度是一种最经济的飞行速度，在飞行同等距离时它的耗油量最小。

4. On both sides of the pilot jumpseats are the two sliding windows, where pilots can evacuate from the cockpit in the event of emergency. 飞行员座椅两侧是两个滑动窗，紧急情况下飞行员可通过滑动窗从驾驶舱撤离。

注：关系副词 where 引导的非限定性定语从句修饰 sliding windows。

5. The fuselage has a circular cross section and is entirely pressurized with the exception of the nose and tail cones, the landing gear bays and air conditioning compartments. 机身呈弧形截面，除机头、尾翼、起落架舱和空调舱外，整个机身都要加压。
6. Normally the 737-700 is capable of carrying 126 passengers for typical two-class configuration or 149 passengers for typical one-class configuration. The designed passenger seating capacity may vary due to the different requirements by the airlines. 波音 737-700 型飞机典型的两舱布局时可装载 126 名旅客，典型的单舱布局时可装载 149 名旅客。旅客座位数会根据航空公司的不同需求进行调整。

注：两舱布局是指头等舱或公务舱加经济舱布局；单舱布局是指客舱全为经济舱，无头等舱或公务舱。

7. In flight, the APU is capable of serving as a back-up for the engine bleed air system up to 17 000 feet. 飞机在 17 000 英尺高度时，辅助动力装置可以为发动机引气系统提供备份。
8. Each unit has a reading light and its switch, supplemental passenger air, emergency oxygen equipment, a NO SMOKING /FASTEN SEAT BELT sign and an attendant call switch. Every other PSU has a speaker installed. 每个旅客服务组件包括阅读灯、通风孔、应急氧气设备、禁止吸烟 / 系好安全带信号牌灯和乘务员呼叫电门。每两个旅客服务组件装有一个扬声器。

注: every other 和 every second 用法区别。every second 是“每逢第二个”, every other 是“每隔一个”或“每两个”。

例: He goes to practise violin every second week of the month.

他每个月的第二个星期去学习小提琴。

He goes to practise violin every other week of the month.

他每个月会隔一个星期去学习小提琴。

9. Each lavatory contains a toilet, wash basin, mirror and all the necessary vanity items and disposal units. 每个厕所里都有马桶、洗手池、镜子和所有必需的卫生用品以及垃圾箱。

Exercises

I. Please answer the following questions.

1. What kind of aircraft is the B737-700?
2. Which part of the aircraft controls the cabin temperature? What's the temperature range?
3. How many passengers and cabin crew can B737-700 hold onboard?
4. What are the cabin crew required to do during takeoff?
5. What items can be found near the flight attendant station?
6. Which section of the cabin is not appropriate for the handicapped passengers to sit in?
7. Where are the galleys?
8. What items can be found in the lavatories?
9. What are the main characteristics of the cargo compartment?
10. What's the function of the APU?

II. Please fill in the blanks with the words given. Change the form where necessary.

install	altitude	disposal	configuration	provision	maintenance
handicap	recline	ventilation	exhaust	supplemental	feature

1. You need to add some _____ information to get the visa.
2. The local government is responsible for the _____ of support for the poor.
3. The bad weather severely _____ the airline's flight schedule.
4. All the passengers feel hard to breathe because of the poor _____.
5. Several fire extinguishers are _____ in the cabin for precaution.
6. With the rising of _____, the temperature is falling rapidly.
7. We placed everything at his _____.

8. This airline _____ excellent cabin service.
9. The daily _____ cost is a little higher compared with its price.
10. If you feel uncomfortable, you can _____ your seatback by pressing this button.

III. Please translate the following sentences into English.

1. 波音 737-700 是中短程飞机。
2. 飞行员在紧急情况下可以从驾驶舱的滑动窗撤离。
3. 波音 737-700 最大载客量为 149 人。
4. 波音 737-700 机翼由缝翼、襟翼、扰流板和副翼组成。
5. 除机头、尾翼、起落架舱和空调舱外，波音 737-700 机身都是要增压的。
6. 辅助动力装置是燃气涡轮发动机。飞机在地面和空中时，辅助动力装置都能工作。
7. 客舱温度可由驾驶舱人工调节，以保证旅客最大舒适度。
8. 乘务员座椅位于舱门附近，面向机尾方向，附近配有应急设备。
9. 头顶行李箱里有便携式氧气瓶、灭火瓶和喇叭等应急设备。
10. 因为客舱中部没有地板高度出口，所以不能把残疾旅客安排在此区域。

IV. Please translate the following passage into Chinese.

The Passenger Service Units (PSU) are installed above each row of seats and have reading lights, supplemental passenger air, emergency oxygen equipment, NO SMOKING / FASTEN SEAT BELT signs and attendant call switches. Every other PSU has a speaker installed. There are special arrangements when you have incapacitated passengers on board. They must be seated in the same section, either in the forward or in the aft, but they can't sit in the mid part of the cabin because there are no floor level exits around. Under the passenger cabin are the two cargo compartments. They are sealed and pressurized but do not have fresh air circulation and temperature control as do the upper passenger cabin. The usable cargo compartment volume is 1 068 cubic feet.

Lesson 2 Flight Attendant Panels and Lighting System

Flight Attendant Panels

There are two flight attendant panels for B737-700, the forward one and the aft one. The forward attendant panel is located at Door L1 above the flight attendant jumpseat. The aft attendant panel is located above the aft flight attendant jumpseat on the bulkhead. Some of the controls on the two panels are similar. Others perform different functions.

On the Forward Attendant Panel (FAP), controls will be found for ceiling lights, entry lights, window lights, work lights, ground service lights and forward airstairs operation instruction. The Aft Attendant Panel (AAP) has a water quantity indicator, a LAV INOP light, an entry light switch, an emergency exit lights switch and a work light switch.

Cabin Lighting System

The cabin lighting system includes the general lighting of the aircraft and emergency lighting. The general lighting contains the passenger cabin lights, entry lights, lavatory lights, reading lights, work lights and galley lights.

General illumination of the passenger cabin is provided by fluorescent lights installed on the overhead stowage bins and on the sidewalls between the passenger service units and the window panels. All cabin window and ceiling lights are controlled from the forward attendant panel.

The ceiling lights are controlled by a five-position switch which is located on the forward attendant panel. The five positions are: NIGHT, OFF, DIM, MEDIUM and BRIGHT. When the switch is set to NIGHT, the incandescent lights located in the top of the stowage bins are turned on. This is the lowest lighting level available for night flight. When the switch is set to OFF, all power is removed from the ceiling lights. When the switch is set to DIM, all fluorescent ceiling lights are turned on to the lowest lighting level; when the switch is set to MEDIUM, all fluorescent ceiling lights are turned on to the medium lighting level; when the switch is set to BRIGHT, all fluorescent ceiling lights are turned on to the brightest lighting level.

A three-position switch on the forward attendant panel controls the window lights. When it is positioned OFF, all the window lights are turned off; when set to DIM, all the window lights illuminate in the lowest light level; when positioned to BRIGHT, all the window lights illuminate brightest.

Illumination of the forward and aft entry door areas are provided by the entry lights switch located on the respective attendant panel. It has three positions: OFF, DIM and BRIGHT. When the switch is set to OFF, all entry lights are off unless external power is provided. With external power, a dim light is provided. When the switch is set to DIM, all entry lights are turned on dim; when the switch is set to BRIGHT, all entry lights are turned on bright.

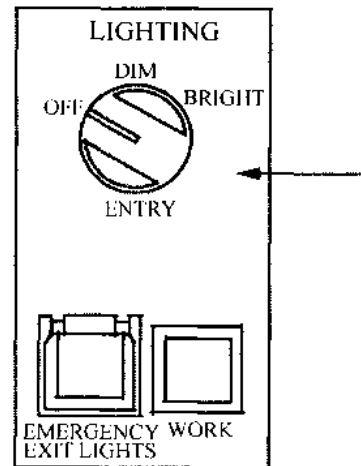
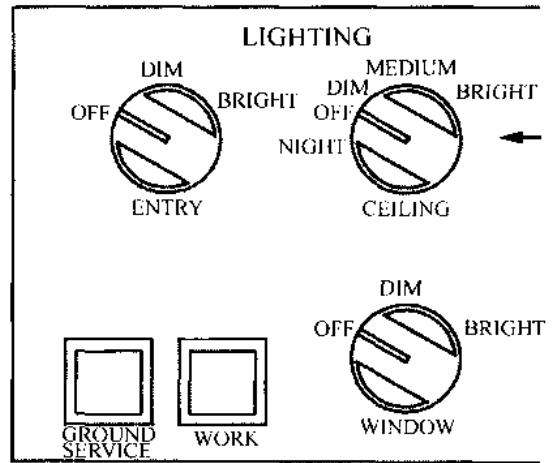
There is a threshold light installed above the floor on the forward lavatory wall. When the entry light switch is set to BRIGHT, the threshold light is turned on.

Each flight attendant station is provided with a work light. The lights are controlled by switches on the respective flight attendant panel located at or next to the flight attendant station.

Lavatories are illuminated by fluorescent lighting. With the airplane on the ground and the ground service bus powered, the lights illuminate bright regardless of the door position. In flight, the lights illuminate dim when the door is unlocked and bright when the door is locked.

The forward galley light has two settings: high and low. The light switch for the forward galley is installed in the forward galley. The aft galley is illuminated by an area light. The light switch for the aft galley is installed on the aft attendant panel.

The emergency lighting system provides direction to exit locations and illuminates the egress paths inside and outside the airplane. Exit signs and emergency area lights indicate all passenger cabin routes. Interior emergency lights consist of door, aisle, escape path,



Lighting Controls

exit lights and exit signs. Emergency exit signs are located in the forward and aft lowered ceiling, in the center of the passenger cabin, above the overwing escape hatches, and above each entry and service door. Emergency escape path lights or floor proximity lights are installed on the floor, approximately 20 inches apart along one side or both sides of the aisle. When illuminated, they provide visual guidance for emergency evacuation if all the lights more than 4 feet above the aisle floor are obscured by smoke. Lighting lasts about 10 minutes on battery power.

The emergency lighting system is normally controlled by a switch on a flight deck and it has three positions:

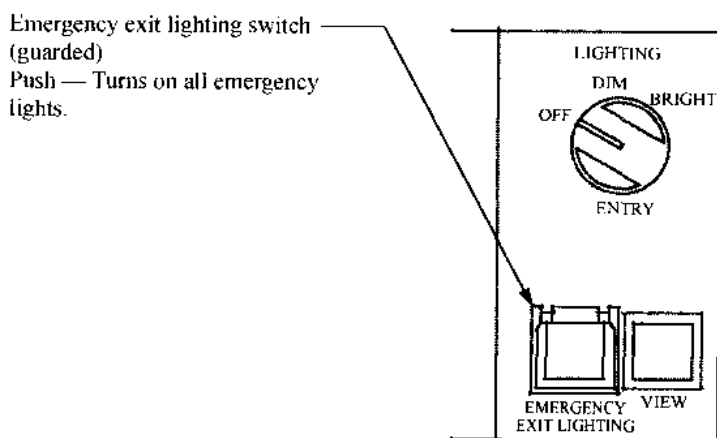
OFF — The Emergency Exit Lights will not illuminate.

ARMED — The Emergency Exit Lights will illuminate if electrical power fails or AC has been shut off.

ON — The Emergency Exit Lights are illuminated.

The emergency exit lights switch is placed in the ARMED position. All interior and exterior light emergency lights illuminate automatically if there is a total loss of electrical power. The pilot can illuminate the emergency light at any time by placing the flight deck emergency lights switch to ON.

The emergency light switch located on the aft attendant panel can be used to bypass the flight deck switch and illuminates the emergency lights, including floor proximity lights, regardless of the position of the flight deck switch.

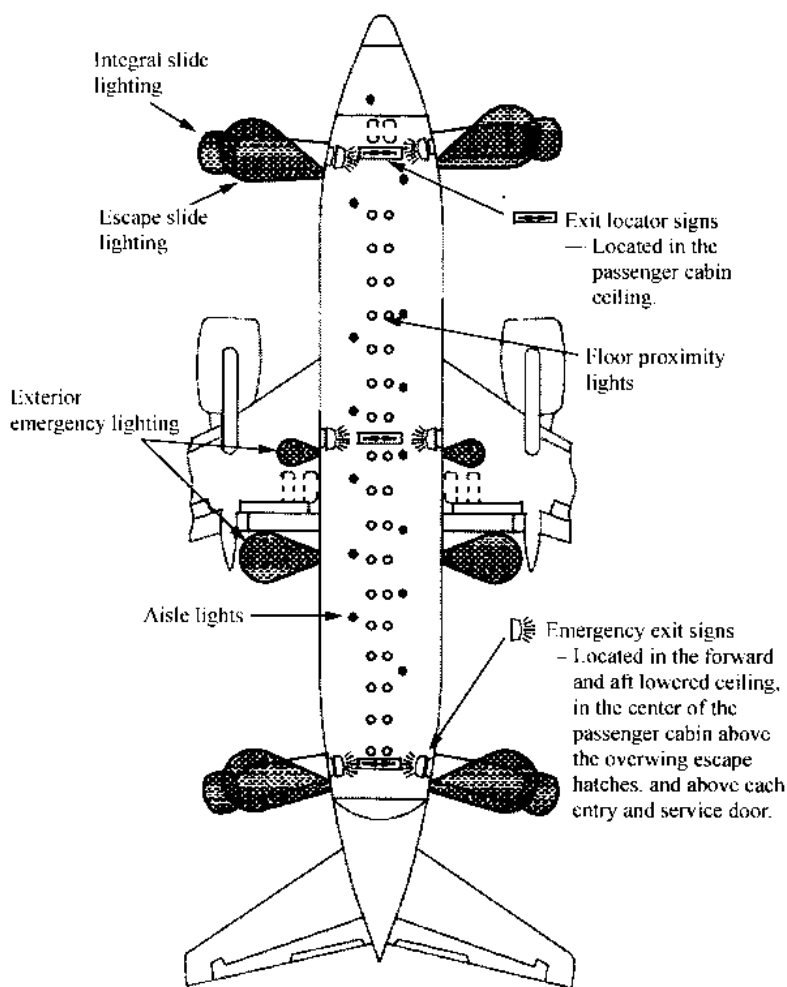


Aft Attendant Panel

Exterior emergency lights illuminate the escape slide. The lights are located aft of each entry and service door, and illuminate the areas at the base of the escape slide. When the slide is deployed, the lights turn on automatically to illuminate the slide lanes. There are

lights at the foot of each escape slide. They are independent of the emergency lighting system and illuminate with slide/raft inflation. Batteries for these lights are on the slide/raft.

Two emergency lights are installed on each side of the fuselage to illuminate the overwing escape routes and ground contact area.



Locations of the Interior and Exterior Emergency Lights

New Words

bulkhead [ˈbʌlkhed]

n. 舱壁

ceiling [ˈsiːlɪŋ]

n. 天花板, 最高限度

instruction [in'strʌkʃən]	<i>n.</i> 指示, 用法说明 (书)
indicator [ˈɪndɪkeɪtə]	<i>n.</i> 指示器
illumination [ɪˌljʊːmiˈneɪʃən]	<i>n.</i> 照明
fluorescent [fluə'resənt]	<i>adj.</i> 荧光的
dim [dɪm]	<i>adj.</i> 暗淡的, 模糊的
medium [ˈmiːdɪəm]	<i>adj.</i> 中间的, 中等的
incandescent [ɪnkæ'nɪdesnt]	<i>adj.</i> 白炽的
respective [rɪs'pektɪv]	<i>adj.</i> 分别的, 各自的
threshold [ˈθreʃhəʊld]	<i>n.</i> 门槛, 入口
regardless [rɪ'gɑːdlɪs]	<i>adj.</i> 不管, 不顾
egress [ˈiːɡres]	<i>n.</i> 出口, 外出
interior [ɪn'tɪəriə]	<i>adj.</i> 内部的, 内的
aisle [aɪl]	<i>n.</i> 过道, 通道
hatch [hætʃ]	<i>n.</i> 舱口, (门、墙壁、地板上的) 开口
proximity [prɒk'sɪmɪti]	<i>n.</i> 接近, 亲近
approximately [əprɒksɪ'mætli]	<i>adv.</i> 近似地, 大约
mount [maʊnt]	<i>vt.</i> 装上, 设置
visual [ˈvɪʒʊəl]	<i>adj.</i> 看的, 视觉的
guidance [ˈɡaɪdəns]	<i>n.</i> 指导, 领导
obscure [əb'skjuə]	<i>vt.</i> 使暗, 使不明显
battery [ˈbætəri]	<i>n.</i> 电池
exterior [eks'tɪəriə]	<i>adj.</i> 外部的, 外在的
bypass [ˈbaɪpɑːs; (US) 'baɪpæs]	<i>vt.</i> 迂回; 旁通
base [beɪs]	<i>n.</i> 底部; 基地
deploy [dɪˈplɔɪ]	<i>v.</i> 展开
lane [leɪn]	<i>n.</i> 车道, 线道
independent [ɪndɪ'pendənt]	<i>adj.</i> 独立的, 不受约束的
inflation [ɪn'fleɪʃən]	<i>n.</i> 充气, 胀大

Technical Terms

flight attendant panel	乘务员面板
ceiling light	天花板灯
entry light	入口灯
window light	窗灯

work light	工作灯
ground service light	地面勤务灯
forward airstairs	前白备梯
water quantity indicator	水量指示器
LAV INOP light	卫生间故障灯
fluorescent light	日光灯, 荧光灯
incandescent light	白炽灯
emergency lighting system	应急照明系统
exit sign	出口标识灯
emergency escape path light	紧急撤离路径灯
floor proximity light	近地灯

Notes

1. General illumination of the passenger cabin is provided by fluorescent lights installed on the overhead stowage bins and on the sidewalls between the passenger service units and the window panels. 安装在头顶行李箱上面以及旅客服务组件与舷窗之间的侧壁上的荧光灯为客舱提供总照明。
2. Illumination of the forward and aft entry door areas are provided by the entry lights switch located on the respective attendant panel. 前后登机门区域的照明由入口灯电门控制, 入口灯电门分别位于前后乘务员面板上。
3. With the airplane on the ground and the ground service bus powered, the lights illuminate bright regardless of the door position. In flight, the lights illuminate dim when the door is unlocked and bright when the door is locked. 飞机在地面时, 地面服务车为其供电, 无论卫生间门打开还是关闭, 灯都亮。在空中, 卫生间门没锁时, 灯暗亮; 卫生间门锁好时, 灯明亮。
4. The emergency lighting system provides direction to exit locations and illuminates the egress paths inside and outside the airplane. 应急照明系统指示出口方向并照亮机内机外出口路线。
5. Interior emergency lights consist of door, aisle, escape path, exit lights and exit signs. 舱内应急灯包括舱门灯、过道灯、地板撤离路径灯、出口灯和出口标示灯。
注: exit light 和 exit sign 的区别。exit light “出口灯” 位于出口附近, 如出口上方; exit sign “出口指示灯” 位于客舱前、中、后部, 指示出口方向。
6. Emergency escape path lights or floor proximity lights are installed on the floor, approximately 20 inches apart along one side or both sides of the aisle. When

illuminated, they provide visual guidance for emergency evacuation if all the lights more than 4 feet above the aisle floor are obscured by smoke. Lighting lasts about 10 minutes on battery power. 紧急撤离路径灯或近地灯安装在地板上, 沿着过道的一侧或两侧、大约每 20 英寸间隔分布。灯亮时, 如果过道地板 4 英尺以上的所有灯光由于烟雾而变得模糊, 它们为紧急撤离提供视觉引导。由于是电池供电, 照明持续约 10 分钟。

7. The emergency light switch located on the aft attendant panel can be used to bypass the flight deck switch and illuminates the emergency lights, including floor proximity lights, regardless of the position of the flight deck switch. 不管驾驶舱应急灯电门在什么位置, 后乘务员面板上的应急灯电门可以旁通驾驶舱电门, 打开包括近地灯在内的应急灯。
8. The lights are located aft of each entry and service door, and illuminate the areas at the base of the escape slide. When the slide is deployed, the lights turn on automatically to illuminate the slide lanes. 位于每个登机门和服务门后面的应急灯照亮滑梯底部区域。当滑梯放出时, 应急灯自动开启, 照亮滑梯。
9. They are independent of the emergency lighting system and illuminate with slide/raft inflation. Batteries for these lights are on the slide/raft. 它们独立于应急照明系统, 当滑梯/救生筏充气时, 灯亮。为该灯供电的电瓶位于滑梯/救生筏上。

Exercises

I. Please answer the following questions.

1. What items does the lighting system consist of?
2. What are the settings of the ceiling lights switch?
3. From where can cabin crew adjust the window light intensity?
4. When do the lavatory lights illuminate bright?
5. What are the functions of the emergency lighting system?
6. Who controls the emergency lights normally? If he fails, what else can be done?
7. What lights does the interior emergency lighting system contain?
8. In which condition is the floor proximity light helpful for evacuation?
9. How does the slide light work?
10. What are the functions of the emergency lights on the fuselage?

II. Please fill in the blanks with the words given. Change the form where necessary.

intensify	illumination	bulkhead	airstairs	respective	egress
proximity	mount	guidance	regardless	lane	independent

1. C919 has well-designed _____, the lightness and color of the lights can change with the different circumstance.
2. He drove them both to their _____ homes.
3. Now that you are a college student, you should learn to be _____ of your parents' help.
4. Flight crew must be trained to evacuate passengers from emergency _____.
5. _____ of whom you are talking to you should always be polite.
6. Their school is in close _____ to the airport.
7. Under his _____, we finished the work smoothly.
8. Your seat is just behind the _____.
9. Two engines are _____ under the wing.
10. My first failure only _____ my desire to succeed.

III. Please translate the following sentences into English.

1. 前后乘务员面板上的部分控制开关功能相似。
2. 飞机照明系统包括一般照明系统和应急照明系统。
3. 天花板灯由前乘务员面板上的一个五位电门控制。
4. 乘务员工作灯由乘务员座椅附近的面板控制。
5. 在空中，如果卫生间门关闭但未锁好，卫生间的灯暗亮。
6. 应急照明系统在紧急情况下能为旅客提供出口的方向性照明。
7. 应急撤离路线灯安装在地板两侧或旅客座椅扶手上。
8. 当飞机电源失效时，飞行员可接通飞机内外的应急灯。
9. 后乘务员面板上的应急灯电门可旁通驾驶舱里的应急灯电门。
10. 滑梯底部也有应急灯。滑梯充气时灯会亮，可以为旅客撤离提供照明。

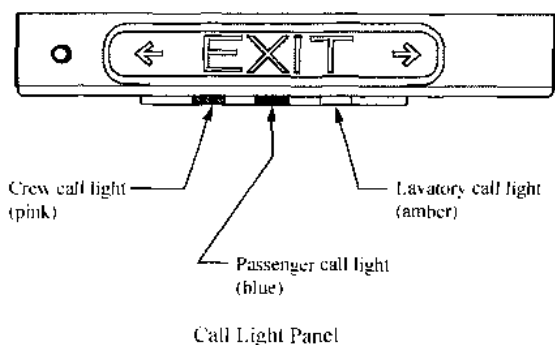
IV. Please translate the following passage into Chinese.

The emergency lighting system provides direction to exit locations and illuminates the egress paths inside and outside the airplane. Exit signs and emergency area lights indicate all passenger cabin routes. Interior emergency lights consist of door, aisle, escape path, exit lights and exit signs. Emergency exit signs are located in the forward and aft lowered ceiling, in the center of the passenger cabin, above the overwing escape hatches, and above each entry and service door. Emergency escape path lights or floor proximity lights are installed on the floor, approximately 20 inches apart along one side or both sides of the aisle. When illuminated, they provide visual guidance for emergency evacuation if all the lights more than 4 feet above the aisle floor are obscured by smoke and lighting lasts about 10 minutes on battery power.

Lesson 3 Communication Systems

The airplane communication systems used by flight crew include the cabin interphone system, passenger address system, passenger call system, lavatory call system and passenger signs.

The cabin interphone system consists of a party-type talk/listen network that has



stations in the flight deck, at each flight attendant station and the external/internal service jacks. It can be used to make the calls as follows; flight deck to attendant, attendant to flight deck, attendant to attendant, and passenger address announcements. There are two handsets in the cabin located at attendant station at the forward and aft entry doors respectively. A master call light panel is

installed in the forward and aft ceiling of the passenger cabin. It has three colored lights representing different calling sources: pink, blue and amber.

The Interphone System

The interphone system, also called crew call system, is used as a way for various crewmembers to gain the attention of other crewmembers. Attention is gained through the use of lights and chimes. The system can be activated from the cockpit, or from either flight attendant station. Removing the handset from the cradle and dialing the code for the desired location or type of call begin the call. Passengers may also use the system to call the attendant through the use of individual call switches at each seat. The master call light panel identifies the source of incoming calls to the attendants.

If a flight attendant wants to call other flight attendant stations, she removes the handset from the handset cradle and dials "5". It is not necessary to press the Push-To-Talk button when making an interphone call. The PA system sounds a HI-LO chime and a pink call light will illuminate in the master call light panel. When the receiving handset is removed

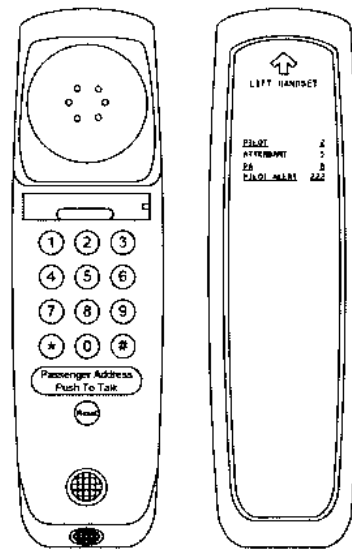
from the cradle, or the calling flight attendant selects RESET, the pink interphone crew light will turn off.

If the flight attendant wants to call the pilot, she presses “2” in the handset. A single tone chime sounds in the flight deck, and a cabin call panel light on the pilot’s overhead panel illuminates. If any urgency or emergency occurs in the cabin and the cabin crew wants to alert the pilot, she will press “2” three times. Three HI tone chimes sound in the flight deck, and the blue light on the pilot’s overhead panel illuminates.

The Passenger Address System

The Passenger Address (PA) system is used for making flight deck, attendant, and prerecorded announcements to the passenger cabin. Entertainment audio and boarding music can also be sent through the PA system. Flight attendants can make PA announcements using the cabin interphone handsets.

When making an announcement, the flight attendant removes the handset from the cradle, enters the number “8” on the handset, pushes and holds the Push-To-Talk switch down while speaking into the microphone. Passenger address announcements are prioritized in the following order: flight deck, flight attendants, prerecorded announcements, boarding music. A higher priority announcement overrides a lower priority announcement. Prerecorded announcements and boarding music sent through the PA system are controlled by the prerecorded announcement/boarding music system. If an announcement is already in progress and has a higher priority, the lower priority systems will be paused or overridden.



Handset

Passenger Call System

Passengers can make a call to a flight attendant from their seating area by pushing the ATTENDANT CALL switch located in the Passenger Service Unit (PSU). Pushing the ATTENDANT CALL switch illuminates the switch located on the PSU and the blue passenger call light at the nearest attendant station. A single HI chime sounds at the associate attendant station. The attendant call light is extinguished by pushing the attendant

call switch in the PSU where the call originated.

Lavatory Call System

A call from the lavatory is made by pushing the ATTENDANT CALL switch located on Lavatory Service Unit (LSU). Pushing the ATTENDANT CALL switch illuminates the lavatory call light located on the outside wall of the calling lavatory, the amber lavatory call light at the associated forward or aft attendant station, and sounds a single HI chime at the nearest attendant station. The lavatory call light is extinguished by pushing the lavatory call light/reset switch on the outside wall of the calling lavatory.

Passenger Signs

NO SMOKING and FASTEN SEAT BELT signs are located in the cabin and installed in the PSU. The signs are visible to all passengers. The NO SMOKING signs are always illuminated during the whole flight. A RETURN TO SEAT sign in each lavatory is visible only when the sign is illuminated. Two selectors on the pilots' overhead panel control the passenger NO SMOKING and FASTEN SEAT BELT signs. These signs can be controlled manually or automatically. When either sign changes, a low-tone sounds over the PA system and/or the passenger headphones.

After takeoff, the NO SMOKING signs extinguish when the landing gear is raised. The FASTEN SEAT BELT/RETURN TO SEAT signs will also extinguish when the wing flaps are fully retracted. During landing, all signs will be illuminated when the flaps are lowered or when the landing gear is down.

Cabin altitude in excess of 10 000 feet automatically illuminates the FASTEN SEAT BELT signs. This occurs regardless of the selector position.

New Words

interphone [ˈɪntə(:)fəʊn]	<i>n.</i>	对讲机
address [əˈdres]	<i>n.</i>	致辞, 演讲
network [ˈnetwɜ:k]	<i>n.</i>	网络
jack [dʒæk]	<i>n.</i>	插孔, 插座
represent [ˌreprɪˈzent]	<i>vt.</i>	代表, 意指
source [sɔ:s]	<i>n.</i>	来源, 发起者
amber [ˈæmbə]	<i>adj.</i>	琥珀色 (黄色) 的
chime [tʃaɪm]	<i>n.</i>	钟声
activate [ˈæktiveɪt]	<i>vt.</i>	使活动

external [eks'tɜ:nl]
 internal [in'tɜ:nl]
 cradle ['kreɪdl]
 dial ['daɪəl]
 code [kəʊd]
 identify [aɪ'dentɪfaɪ]
 reset [ˌrɪː'set]
 illuminate [ɪ'ljuːmineɪt]
 urgency [ˈɜːdʒənsɪ]
 alert [ə'lɜːt]
 entertainment [ˌentə'teɪnmənt]
 audio ['ɔːdiəʊ]
 microphone ['maɪkrəfəʊn]
 prioritize [praɪ'ɔːrɪtaɪz, 'praɪəri-]
 priority [praɪ'ɔːrɪtɪ]
 override [ˌəʊvə'raɪd]
 associate [ə'səʊʃieɪt]
 extinguish [ɪks'tɪŋgwɪʃ]
 originate [ə'rɪdʒɪneɪt]
 selector [sɪ'lektə]
 excess [ɪk'ses, 'ekses]

adj. 外部的
adj. 内在的, 内部的
n. 摇篮, 支架
v. 拨 (号)
n. 代码, 编码
vt. 识别, 鉴别
v. 复位
v. 照明, 照亮
n. 紧急, 紧急的事
n. 警惕, 警报
v. 警戒
n. 娱乐
adj. 音频的, 声频的, 声音的
n. 扩音器, 麦克风
vt. 把...区分优先次序
n. 优先, 优先权
vt. 超控
adj. 相关的; 副的
vt. 熄灭
vt. 引起, 发起
n. 选择器
n. 超过

Technical Terms

cabin/service interphone system
 passenger signs
 cabin interphone system
 master call light panel
 Passenger Address (PA) system
 prerecorded announcement
 Push-To-Talk switch
 pilot's overhead panel
 passenger call system
 attendant call switch

客舱/勤务内话系统
 旅客信号牌灯
 客舱内话系统
 主呼叫灯面板
 旅客广播系统
 预先录制的广播词
 按下通话电门
 飞行员顶板
 旅客呼叫系统
 乘务员呼叫电门

lavatory call system	卫生间呼叫系统
Lavatory Service Unit (LSU)	卫生间服务组件
NO SMOKING sign	禁止吸烟信号牌灯
FASTEN SEAT BELT sign	系好安全带信号牌灯

Notes

1. The cabin interphone system consists of a party-type talk/listen network that has stations in the flight deck, at each flight attendant station and the external/internal service jacks. 客舱内话系统是一组通话/接听网络, 在驾驶舱、每个乘务员工作位置和外部/内部勤务插孔都有站点。
2. A master call light panel is installed in the forward and aft ceiling of the passenger cabin. It has three colored lights representing different calling sources: pink, blue and amber. 主呼叫灯面板位于客舱前、后天花板上, 三种颜色的灯光表示不同的呼叫源: 粉色、蓝色和琥珀色。

注: calling sources 是指按下乘务员呼唤电门的旅客的具体位置。

3. It is not necessary to press the Push-To-Talk switch when making an interphone call. 内话呼叫时无需使用“按下通话”电门。
4. When the receiving handset is removed from the cradle, or the calling flight attendant selects RESET, the pink interphone crew light will turn off. 当乘务员从支架上取下手机接电话, 或发出呼叫的乘务员按下复位电门时, 粉色内话机组呼叫灯熄灭。
5. If any urgency or emergency occurs in the cabin and the cabin crew wants to alert the pilot, she will press “2” three times. Three HI tone chimes sound in the flight deck, and the blue light on the pilot’s overhead panel illuminates. 如果客舱里发生任何紧迫或紧急事情, 乘务员想要向飞行员报警, 她按三下手机上的“2”。驾驶舱里会听到三声高音声响, 飞行员顶板上的蓝色灯会亮。
6. Passenger address announcements are prioritized in the following order: flight deck, flight attendants, prerecorded announcements, boarding music. A higher priority announcement overrides a lower priority announcement. 按重要性旅客广播顺序为: 驾驶舱、乘务员、预先录制的广播词、登机音乐。较高级别的广播词优先于较低级别的广播词。
7. Pushing the ATTENDANT CALL switch illuminates the lavatory call light located on the outside wall of the calling lavatory, the amber lavatory call light at the associated forward or aft attendant station, and sounds a single HI chime at the nearest attendant station. 按下乘务员呼叫电门, 发出呼叫的卫生间外墙上的呼叫灯亮, 位于相关的前或后

乘务员位置的琥珀色呼叫灯亮，同时离该卫生间最近的乘务员位置会听到一声高音音响。

8. After takeoff, the NO SMOKING signs extinguish when the landing gear is raised. The FASTEN SEAT BELT/RETURN TO SEAT signs will also extinguish when the wing flaps are fully retracted. 起飞后，当起落架收起时，“禁止吸烟”信号牌灯熄灭。当襟翼完全收起时“系好安全带/回到座位”信号牌灯也会熄灭。
9. Cabin altitude in excess of 10 000 feet automatically illuminates the FASTEN SEAT BELT signs. This occurs regardless of the selector position. 客舱高度超过10 000英尺时，不管（驾驶舱）选择器在什么位置，“安全带”信号牌灯将自动亮起。

Exercises

I. Please answer the following questions.

1. What elements does the communication system consist of?
2. What are the colors of the master call lights and what do they represent?
3. What do the numbers “2”, “5”, “8” on the flight attendant handset mean?
4. What is the priority sequence of the PA announcements?
5. If a passenger presses the attendant call button in his seat, what will happen in the cabin?
6. What do flight attendants do to extinguish the call lights?
7. If a passenger needs help in the lavatory, what is he going to do?
8. How do flight attendants reset the lavatory call system?
9. When do the NO SMOKING signs automatically illuminate?
10. In what conditions does the FASTEN SEAT BELT sign illuminate?

II. Please fill in the blanks with the words given. Change the form where necessary.

activate	excess	identify	override	represent	associate
flap	alert	cradle	network	audio	priority

1. The program is presented by the _____ as a public service.
2. The sea is thought to have been the _____ of life.
3. She is _____ to every sound and movement.
4. He is a(n) _____ professor and director of research center.
5. The rose _____ love.
6. Would you be able to _____ the man who robbed you?

7. The airline raised all the employees' salary to _____ them to work hard.
8. This low cost airline charges for the video and _____ entertainment service on plane.
9. This is the key and should be given top _____.
10. This plane can reach speeds in _____ of 1 000 kilometers an hour.

III. Please translate the following sentences into English.

1. 乘务员手机分别位于客舱前、后乘务员座椅附近。
2. 主呼叫面板位于客舱前、后天花板上，共有粉、蓝和琥珀色三种灯。
3. 机上内话系统用于飞行机组和客舱机组之间的相互联络。
4. 当乘务长呼叫后舱乘务员时，主呼叫面板上的粉色灯会亮，旅客广播系统发出高一低声响。
5. 如果客舱发生紧急情况，乘务员按下手机上的“2”三次，来向飞行员报警。
6. 驾驶舱广播优先于机上娱乐节目的播放。
7. 按下旅客服务组件上的乘务员呼唤按钮，可以使旅客呼叫系统复位。
8. 旅客在卫生间按下乘务员呼唤按钮，离该卫生间最近的琥珀色灯会亮。
9. 在整个飞行期间，“禁止吸烟”信号牌灯会一直接通。
10. 客舱高度超过 10 000 英尺时，“安全带”信号牌灯会自动亮起。

IV. Please translate the following passage into Chinese.

NO SMOKING and FASTEN SEAT BELT signs are located in the cabin and installed in the PSU. The signs are visible to all passengers. The NO SMOKING signs are always illuminated during the whole flight. A RETURN TO SEAT sign in each lavatory is visible only when the sign is illuminated. Two selectors on the pilots' overhead panel control the passenger NO SMOKING and FASTEN SEAT BELT signs. These signs can be controlled manually or automatically. When either sign changes, a low-tone sounds over the PA system and/or the passenger headphones.

Lesson 4 Lavatories and Galleys

Lavatories

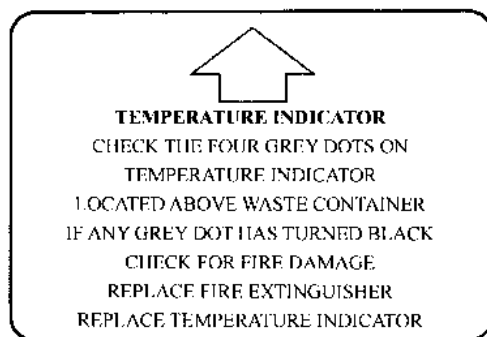
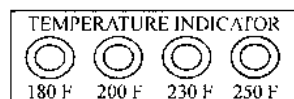
There are three lavatories on board, one in the forward and two in the aft. Each lavatory contains all the necessary vanity items and disposal units. In addition, there is a Lavatory Service Unit which includes an attendant call switch, a loudspeaker for passenger address and a RETURN TO SEAT sign. We can also find a smoke detector, a waste compartment fire extinguishing system and an overhead compartment containing two oxygen masks for use in case oxygen is needed during a flight.

The lavatory door can be locked or unlocked from the outside by opening the flap above the VACANT/OCCUPIED indicator and sliding the lock left or right. When the lavatory door is closed and latched, the mirror light and a LAVATORY OCCUPIED sign will illuminate.

In each lavatory there is a smoke detector mounted in the ceiling. When the smoke detector detects smoke or overheat conditions, a horn in the smoke detector sounds and the red alarm indicator light illuminates on the smoke detector. Once smoke clears, the red alarm indicator light extinguishes, the horn stops and the smoke detector is sensitive to smoke again.

An automatic fire extinguishing system is located beneath the sink in each lavatory. The fire extinguisher discharges a Halon vapor through either one or both heat-activated nozzles. Both nozzles discharge toward the waste disposal container. The color of the nozzle tips change to white if the extinguisher has been discharged.

A temperature indicator is located inside the waste compartment below each sink. Grey dots on the indicator turn black when it is exposed to high temperatures. If any dot has turned black, the extinguisher may have discharged.

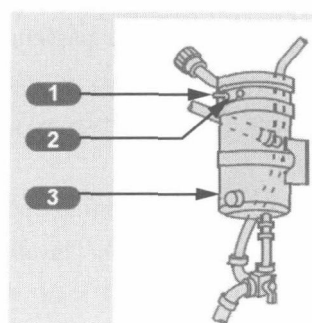


Lavatory Temperature Indicator

Oxygen masks in the lavatory will automatically drop if the cabin altitude exceeds approximately 14 000 feet. The masks can also be manually deployed from the flight deck. If the masks deploy, the RETURN TO SEAT sign will be inhibited in the lavatory.

Lavatory Water and Waste Systems

The potable water system is supplied from one tank located beneath the cabin floor and the maximum capacity of the water tank is 40 gallons. Potable water is supplied to the lavatory sinks and the toilet flush system. The tanks are normally pressurized with air from the airplane's bleed air system. When the pressurized air is not available, alternate



Lavatory Sink Cabinet

1 Water heater switch
On — activates the water heater.

2 Water heater light
Illuminated — heater operating.

3 Temperature control switch

pressurization is automatically provided from an electrically driven air compressor.

A water heater is installed in each lavatory and provides hot water to the sinks. An amber indicator light located near the top of the heater is illuminated when the power switch is on and the heater is

operating normally. An ON/OFF switch is located next to the amber light.

It has three selectable temperatures:

- Low: approximately 41°C
- Medium: approximately 46°C
- High: approximately 52°C

The Aft Attendant Panel (AAP) has a water quantity indicator, a CLEAN/CHECK SENSOR, LAVS INOP lights and waste tank level switch lights. The amount of water remaining in the tank can be verified on the AAP. Water is not available while the tanks are being serviced.

Waste water from the lavatory sinks is drained overboard through heated drain masts. Toilet waste is flushed into a holding tank located in the bulk cargo area, and its maximum capacity is 60 gallons. Below 16 000 feet, the waste system uses a vacuum to collect the waste material and deposit it in the tanks. Above 16 000 feet, the pressure difference between the cabin and outside pressure moves the waste from the toilets to the tanks. Waste tank quantity status can be verified on the AAP. In the event the waste tank becomes full, the LAVS INOP light will illuminate and all lavatory toilets will be inoperative. The CLEAN/CHECK SENSOR light will illuminate if a sensor fails or is fouled, indicating

system maintenance is required. The waste system is still operational when the CLEAN/CHECK SENSOR light is illuminated.

All lavatories have an Attendant Call switch and a RETURN TO SEAT sign that will illuminate when the FASTEN SEAT BELT lights are turned on. Some lavatories are also equipped with a diaper changing table and support facilities for handicapped passengers.

There is a WATER SUPPLY selector valve in each lavatory. The WATER SUPPLY selector valve located in the cabinet below the sink has four positions.

SUPPLY ON — Normal operating position. When the water system is depressurized, all lavatories except the forward one will drain. In the forward lavatory, the drain valve must be opened to drain the lavatory.

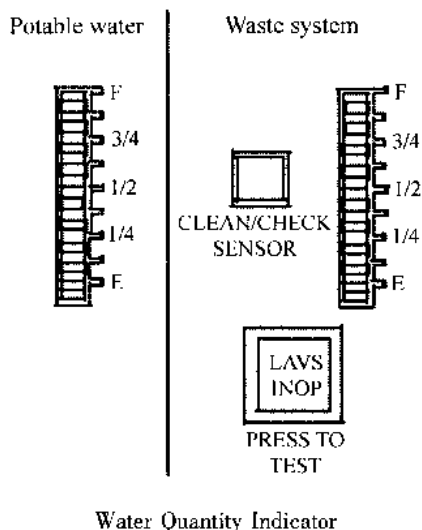
FAUCET ONLY — In this position, water is supplied to the faucet, but not to the toilet.

TOILET ONLY — In this position, water is supplied to the toilet, but not to the faucet.

OFF — No water is supplied to the lavatory.

Pushing the flush button on the toilet activates the flush cycle. A flush cycle uses water from the potable water system, and lasts about seven seconds. If a toilet floods due to the water rinse valve sticking open after flushing, cabin crew should immediately flush the toilet to evacuate excess water from the toilet bowl. If the water is still flowing, shut off the water for that toilet. Turn the water supply selector valve to the FAUCET ONLY or OFF position. If the sink water faucet buttons do not shut off the running water, the water system for the sink must be shut off. Turn the WATER SUPPLY selector valve to the TOILET ONLY or OFF position. Blockages can occur if large objects are flushed down the toilet. Items which commonly cause blockages are diapers, hand towels, cups, and large quantities of toilet paper.

If the holding tank on one toilet is either full or being serviced, or automatic shutdown occurs, a LAV INOP light illuminates. Maintenance servicing is required to extinguish the light. Do not use the associated lavatories when they are inoperative as the flush mechanisms will not work.



During ground servicing the toilet storage tanks are drained, rinsed and a chemical pre-charge is added.

Galleys

There are two galleys in the 737-700. They are located at the forward and aft end of the cabin so as to be convenient to all passengers. The galley units are removable and are manufactured by vendors as requested by the particular airlines. In general, the equipment of the galley unit consists of such main items as ovens, waste containers, coffee makers, refrigeration units, storage/servicing carts, sinks and storage space to aid in food preparation and dispensing.

The galleys are equipped with electrical power and water systems. Each galley has a panel containing switches for individual galley lighting. Electricity for the galleys is 115V AC, 400 Hz supplied from the airplane generators. Power for the galley is available only if the galley power switch in the cockpit is ON. In flight, with the loss of one or more generators, galley electrical power is automatically shut off. A galley vent system keeps the air fresh. Meal carts are restrained for taxi, takeoff and landing in their respective stowage area.

Galley water is supplied from the water tank. Each galley is equipped with a WATER SHUT-OFF valve. Occasionally a water leak may occur in one of the galleys. If this happens, positioning the WATER SHUT-OFF valve to OFF turns off water to that galley. Galley sink waste water is drained overboard through heated drain masts. Do not dispose of solid waste materials (coffee grounds, tea bags, fruit pulp and so on) in the sink to prevent sink drainage blockage. Put solid waste material in the waste containers. When disposing of milk and wine, pour them separately into the sink, diluting each with an



WATER SHUT-OFF valve

equal amount of water to flush the system. If a sink drain is blocked, or drainage is slow, no more fluids should be poured into the sink. Dispose of fluids in another galley sink.

If the water cannot be turned off in any of the galley fixtures, such as the sink water faucet, coffee maker, water boiler, and so on, the water system for that galley must be shut off. Position the galley WATER SHUT-OFF valve to OFF.

The two galleys contain similar equipment, but the aft galley has more equipment than the forward one because it provides service to a larger portion of the airplane.

The oven is used to heat prepared meals to necessary temperatures before the meal is served to passengers. There is no need to cook food on the airplane. The oven controls are located above the oven. While heating food, cabin crew must ensure that the oven door is

securely closed and no other items except food are in it.

The hot cup usually heats such items as baby food or baby milk. Please note that water in the hot cup should be no more than 4/5 of its capacity. The hot cup controls are on the electrical panel.

New Words

detector [di'tektə]	<i>n.</i> 探测器
flap [flæp]	<i>n.</i> 垂下作为覆盖之物; 盖
vacant ['veikənt]	<i>adj.</i> 空的, 空闲的, 空缺的
slide [slaid]	<i>n.</i> 滑, 滑动
	<i>vt.</i> (使) 滑动, (使) 滑行
latch [lætʃ]	<i>n.</i> 门插销
	<i>v.</i> 闭锁
detect [di'tekt]	<i>vt.</i> 侦查, 探测
horn [hɔ:n]	<i>n.</i> 喇叭
sensitive ['sensitiv]	<i>adj.</i> 敏感的, 灵敏的
beneath [bi'ni:θ]	<i>prep.</i> 在...之下
sink [siŋk]	<i>n.</i> 水槽, 水池
discharge [dis'tʃɑ:dʒ]	<i>vt.</i> 放出, 开(炮), 放(枪)
vapor ['veipə]	<i>n.</i> 水汽, 水蒸气
nozzle ['nɔ:zl]	<i>n.</i> 管口, 喷嘴
tip [tip]	<i>n.</i> 顶, 尖端
dot [dɒt]	<i>n.</i> 点, 圆点
expose [iks'pəuz]	<i>vt.</i> 使暴露, 受到, 使曝光
inhibit [in'hɪbɪt]	<i>vt.</i> 抑制, 约束
potable ['pəutəbl]	<i>adj.</i> 适于饮用的
flush [flʌʃ]	<i>n. / v.</i> 冲洗
alternate [ɔ:l'tə:nɪt]	<i>adj.</i> 备用的, 交替的, 轮流的, 预备的
available [ə'veɪləbl]	<i>adj.</i> 可用的, 手边的, 可获得的
compressor [kəm'presə]	<i>n.</i> 压缩机
sensor ['sensə]	<i>n.</i> 传感器
verify ['verɪfaɪ]	<i>vt.</i> 检验, 校验, 查证, 核实
drain [dreɪn]	<i>vt.</i> 排出
bulk [bʌlk]	<i>adj.</i> 散装的, 松散的

vacuum ['vækjuəm]	<i>n.</i> 真空, 真空吸尘器
deposit [di'pɒzɪt]	<i>vt.</i> 存放, 堆积
status ['steɪtəs]	<i>n.</i> 情形, 状况
foul [faʊl]	<i>vt.</i> 淤塞
valve [vælv]	<i>n.</i> 阀门, 活门
cabinet ['kæbɪnɪt]	<i>n.</i> (有抽屉或格子的) 橱柜
depressurize [,di:'prefəraɪz]	<i>vt.</i> 使减压, 使降压
faucet ['fɔ:ɪsɪt]	<i>n.</i> 水龙头
rinse [rɪns]	<i>n.</i> 冲洗, 漂净
stick [stɪk]	<i>v.</i> 卡住, 塞住
blockage ['blɒkɪdʒ]	<i>n.</i> 封锁, 妨碍
mechanism ['mekənɪzəm]	<i>n.</i> 机械装置
manufacture [,mænju'fæktʃə]	<i>vt.</i> 制造, 加工
vendor ['vendɔ:]	<i>n.</i> 卖主
refrigeration [ri,'frɪdʒə'reɪʃən]	<i>n.</i> 冷藏, 制冷, 冷却
dispense [dis'pens]	<i>vt.</i> 分发, 分配
Hz [hɜ:ts]	<i>abbr.</i> Hertz 赫兹 (频率单位: 周/秒)
restrain [rɪs'trein]	<i>vt.</i> 抑制, 制止
ground [graʊnd]	<i>n.</i> (复数) 沉淀物, 液体底部的沉淀物
pulp [pʌlp]	<i>n.</i> (水果的) 果肉, 纸浆
dilute [dai'lju:t, ,di'l-]	<i>v.</i> 冲淡, 变淡, 变弱, 稀释
drainage ['dreɪnɪdʒ]	<i>n.</i> 排水, 排泄
fixture ['fɪkstʃə]	<i>n.</i> 固定设备

Technical Terms

smoke detector	烟雾探测器
Halon fire extinguisher	海伦灭火瓶
temperature indicator	温度指示器
potable water system	饮用水系统
toilet flush system	马桶冲水系统
bleed air system	引气系统
water quantity indicator	水量指示器
drain mast	排水管
waste tank	污水箱

water shutoff valve	供水切断阀门
water rinse valve	冲水阀门
water supply selector valve	供水选择器阀门
hot cup	烧水杯
electrical panel	配电板

Notes

1. The lavatory door can be locked or unlocked from the outside by opening the flap above the VACANT/OCCUPIED indicator and sliding the lock left or right. 打开“无人/有人”指示灯上面的盖子，把锁向左或右滑动，可以在卫生间外把门锁上或打开。
2. An automatic fire extinguishing system is located beneath the sink in each lavatory. The fire extinguisher discharges a Halon vapor through either one or both heat-activated nozzles. 每个卫生间的洗手池下面都装有自动灭火系统。灭火器通过其中一个或两个热启动的喷嘴释放海伦气体。

注：Halon 是卤代烷，卤化甲或乙烷的有机混合物，可用于灭火。

3. Grey dots on the indicator turn black when it is exposed to high temperatures. If any dot has turned black, the extinguisher may have discharged. 当温度指示器暴露在高温环境时，其上面的灰白色圆点会变成黑色。如果任一圆点变成黑色，灭火瓶可能已释放（灭火剂）。

注：may have discharged 情态动词 + 动词完成时表示对过去情况的推测。can, could 表示推测时一般用于否定句或疑问句。must, may, might 一般用于肯定句中，表示肯定的推测。must 表示把握性很大，常译成“一定；肯定”；might 表示推测时不一定是 may 的过去时，只是表示其可能性较小。could, might 表示推测时不表示时态，其推测的程度不如 can, may。

4. The tanks are normally pressurized with air from the airplane's bleed air system. When the pressurized air is not available, alternate pressurization is automatically provided from an electrically driven air compressor. 水箱通常由飞机引气系统里的空气加压。当来自飞机引气系统的加压空气不能使用时，电动空气压缩机将自动提供备用增压。

注：not available 在这句话里是指“有故障而不能使用”。

5. SUPPLY ON — Normal operating position. When the water system is depressurized, all lavatories except the forward one will drain. In the forward lavatory, the drain valve must be opened to drain the lavatory. 供水接通——正常操作位置。供水系统减压时，除前卫生间外，其他卫生间将排水。前卫生间要排水，必须打开前卫生间里

的排水阀门。

6. If a toilet floods due to the water rinse valve sticking open after flushing, cabin crew should immediately flush the toilet to evacuate excess water from the toilet bowl. If the water is still flowing, shut off the water for that toilet. Turn the water supply selector valve to the FAUCET ONLY or OFF position. 如果马桶冲水后由于冲水阀门被卡在打开位置, 马桶里的水会溢出, 乘务员应该马上向马桶冲水以排出其多余的水。如果水继续流, 切断马桶供水。将供水选择器阀门旋至“水龙头”位置或“切断”位置。
7. Electricity for the galleys is 115V AC, 400 Hz supplied from the airplane generators. Power for the galley is available only if the galley power switch in the cockpit is ON. In flight, with the loss of one or more generators, galley electrical power is automatically shut off. 飞机发电机提供给厨房的电为 115 伏、400 赫兹的交流电。如果驾驶舱里的厨房电源电门设在“接通”位置, 厨房有电。在空中, 如果一台或多台发电机失效, 厨房电源会自动断开。

Exercises

I. Please answer the following questions.

1. What items does LSU include?
2. What's the function of the smoke detector?
3. Where is the fire extinguisher located in the lavatory? How does it work?
4. Why do the flight attendants check the temperature indicator in the lavatory pre-flight?
5. How does the cabin crew ensure that the water heater works normally?
6. What elements can be found on the AAP?
7. How is the waste water from the sinks drained overboard?
8. If water leakage occurs in the lavatory, what measures can be taken?
9. In what situation will the galley power be turned off?
10. What are the functions of the oven and the hot cup?

II. Please fill in the blanks with the words given. Change the form where necessary.

sensitive	alternate	rinse	verify	drainage	stick
discharge	available	restrain	vacant	expose	detector

1. There are a lot of _____ in the room to observe the in-door temperature.
2. We had to divert to the _____ airport due to the bad weather at the destination

airport.

3. The season ticket is _ _ _ _ _ for three months.
4. They wanted their children to become great musicians, so they often _ _ _ _ _ them to classical music.
5. She is very _ _ _ _ _ to what people think of her.
6. You can't just _ _ _ _ _ the bottles, you have to wash them out carefully.
7. Bad _ _ _ _ _ caused the floor of the cabin to be flooded.
8. I can't _ _ _ _ _ my anger when I hear of people being cruel to animals.
9. Are there any rooms _ _ _ _ _ in this hotel?
10. Subsequent events _ _ _ _ _ that his judgement was at fault.

III. Translate the following sentences into English.

1. 卫生间的门关闭并锁好时，卫生间里的镜灯和“卫生间有人”信号灯会亮起。
2. 当烟雾探测器探测到卫生间温度过高或有烟时，警告喇叭响，红色警示灯亮。
3. 如果灭火器已被使用，该喷嘴尖的颜色会变成白色。
4. 水箱通常由飞机引气系统增压。
5. 通过后乘务员面板，乘务员可以查看水箱和污水箱的水量。
6. 飞行中卫生间洗手池的污水通过两根加热管道直接排出机外。
7. 当供水阀门在“水龙头”位置时，水箱仅为水龙头供水。
8. 当一个马桶的污水箱装满后，“卫生间不工作”灯会亮，乘务员应停止该卫生间的使用。
9. 在空中，如果一台或多台发电机失效，厨房电源将自动切断。
10. 如果前厨房的开水器漏水，把该厨房的供水阀门推到“关闭”位置，可以切断对前厨房的供水。

IV. Please translate the following passage into Chinese.

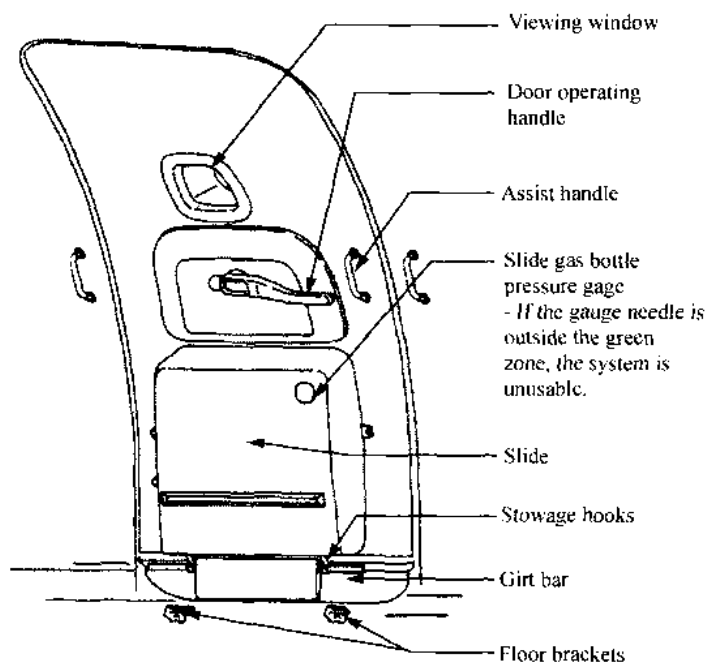
Pushing the flush button on the toilet activates the flush cycle. A flush cycle uses water from the potable water system, and lasts about seven seconds. If a toilet floods due to the water rinse valve sticking open after flushing, cabin crew should immediately flush the toilet to evacuate excess water from the toilet bowl. If the water is still flowing, shut off the water for that toilet. Turn the water supply selector valve to the FAUCET ONLY or OFF position. If the sink water faucet buttons do not shut off the running water, the water system for the sink must be shut off. Turn the WATER SUPPLY selector valve to the TOILET ONLY or OFF position.

Lesson 5 Doors, Emergency Exits and Forward Airstairs

Cabin Doors and Slides

There are four identically operated entry doors. They are used to enter and exit the airplane, and also serve as emergency exits. Normally, the left side doors are intended for normal passenger entry and exit, the right side doors function as galley and service doors. The doors can be opened and closed manually from inside or outside the airplane.

The forward left entry door is spring-assisted for easier opening. Each door is held in the open position by a mechanical latch on the upper hinge. A window in each door allows observation outside of the airplane. A single lane

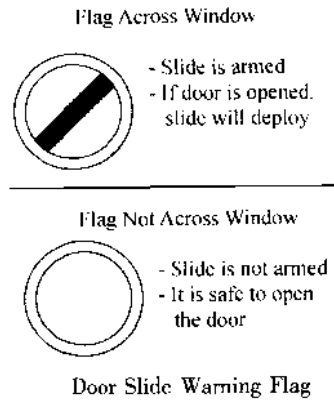


Entry Door

slide is contained in the lower inboard face of each cabin door. The slide pressure can be checked by looking into the pressure gauge.

There is an assist handle located at window level. The door handle is used to open and close the door. Near each door is a dedicated assist space. The dedicated assist space is located between the attendant station and the doorsill. During an emergency evacuation it is important that the flight attendant grasp the assist handle and stand in the dedicated assist space to ensure that they are not blocking the exit in any way.

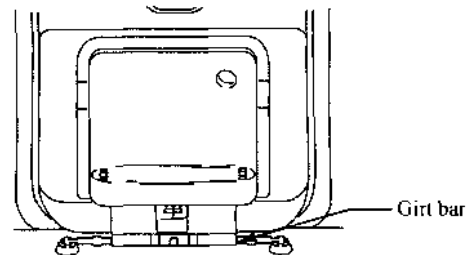
A red warning flag (the girt bar warning flag) is installed next to the observation window in each entry door. In the warning position, the flag is clearly visible to anyone



looking in the window from outside the airplane. This is the visual warning that the girt bar has been attached to the floor brackets and the slide will automatically deploy when the door is opened. If the flag is not placed across the observation window, the slide is not armed, and it is safe to open the door. In a non-emergency situation, opening the door from the inside or outside with the door slide armed will automatically inflate the slide and cause injury or death to the ground crew standing outside the door.

To open the doors from inside the passenger cabin in normal situations, the flight attendant must first look outside to see if the area is ready for the passengers to disembark, next disarm the cabin doors by retracting the girt bar out of the lock on the floor and placing it into the bottom of the door, then remove the red flag from the window position to its unarmed position, and rotate the door handle 180° in the direction of the arrow (to OPEN). The door will swing inboard. The flight attendant must grasp the assist handle on the door with one hand, and with the other hand grasp the assist handle located beside the door inside of the airplane, push the door outward to the full open position. When the door is fully open and parallel to the fuselage, it will lock and remain open. The final step is to connect with a jetway or passenger stairs or to extend the airstairs for passengers to disembark.

To close the doors from inside the cabin, the flight attendant releases the gust lock, grasps the assist handle on the door, pulls the door towards herself and the door will lift off the body and enter the cabin. When the cabin door has reached its most inboard point, the flight attendant rotates the door handle 180° in the opposite direction to the arrow to close and lock the cabin door. The forward doors will move into the cabin with significant speed and force. Then the flight attendant takes the girt bar down in the door and place it in the lock on the floor. After arming the door, the flight attendant must place the red warning flag across the window.



Girt Bar in Floor Brackets

Preflight, the flight attendant must ensure the slide pressure gauge is in the green zone. The doors must be armed prior to pushback. The red warning flag must be attached

across the observation window before the flight attendant attaches the girt bar to the floor fittings.

When the airplane is parked at the gate on arrival, and the seatbelt sign has been turned off, flight attendants mustn't remove the warning flag until the girt bar has been removed from the floor fittings, then do cross-check as required.

To open the door and deploy the slide in a non-normal situation, flight attendants must assess the escape route conditions by observing the cabin interior and airplane exterior conditions to identify usable escape exits. Before operating the door, they must ensure that the airplane has stopped and the engines are shut down, verify that the girt bar is fastened to the floor brackets, then rotate the door handle up and fully aft, push the door until it is in the full open position with the girt bar fastened to the floor brackets and locked against the fuselage. The slide should deploy and inflate automatically in about four seconds. In certain adverse airplane attitudes, flight attendants can direct two able-bodied passengers to assist in pushing the door out and forward to the open position.

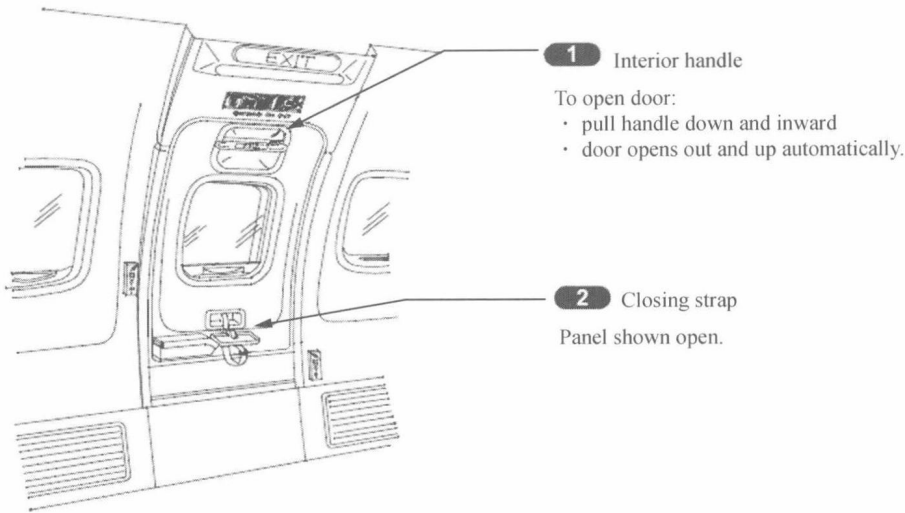
As the door opens, the slide falls out through the doorway. As it free-falls from the doorway approximately 15 inches, the slide inflates automatically. If the slide does not inflate, pull the red manual inflation handle located on the right side of the slide near the doorsill. If the slide does not inflate after both automatic and manual attempts, flight attendants do not use this exit, and must direct passengers to another one.

The escape slides are not certified as life rafts, but may be used in a ditching situation as a floatation device. To release the slide from the airplane, flight attendants must lift the flap at the top of the slide and pull the disconnecting handle.

There are lights at the foot of each escape slide. They are independent of the rest of the emergency lighting system and come on with slide inflation. Batteries for these lights are contained on the slide.

Overwing Emergency Exits

An emergency exit is located on each side of the cabin over the wings. The overwing emergency exits are smaller than the four cabin doors and are used for emergency only. They are held in place by mechanical locks. The overwing emergency exits can be opened from either inside or outside of the airplane using a spring-loaded handle located at the top of the door. To open the emergency exit, flight attendants pull the handle down and inward, and the door will open out and up automatically. For safety reasons, the exits are automatically locked by a 28 Volt DC flight lock system. The flight lock system is designed to ensure that the flight lock will automatically lock during takeoff, in-flight, and landing; and unlock on the ground to allow for opening of the exit in emergency situations.



Interior View

Preflight flight attendants must ensure that the plastic cover is installed over the handle and personally brief the passengers sitting at the exit row that it will be their responsibility to assess conditions and open the overwing exit in the event of an emergency. There is a placard indicating the operation of the door both inside and outside by the door. Flight attendants always assess outside condition prior to opening any doors!

There are two sliding windows on the flight deck that can be used as emergency exits if cabin exits are unusable. The flight deck window control is the window lock lever. Releasing the lock lever and sliding aft, will open the slide windows. Escape ropes are in the compartments above each pilot seat. To use the escape ropes, pilots press the red button to open the compartment, remove the escape rope from the compartment (Green "knot" indicates rope has been completely extended.), and throw it out the window. In this way pilots can evacuate from the cockpit in an emergency if the cockpit door is not available.

Forward Airstairs

The forward airstairs provide the capability of boarding passengers if the local airport does not have the jetway or passenger stairs for disembarkation. The airstairs, stowed in a compartment just below the forward entry door, are electrically operated and may be controlled from inside or outside the airplane. The interior control switches are located in the FAP to control retraction and extension of the airstairs. Their specific functions are listed below:

There are three positions on the Light Switch: OFF, AUTO and ON. When it is positioned AUTO, the airstairs tread light illuminates automatically upon extension and extinguishes upon retraction. When set ON, it illuminates the airstairs tread light.

RETRACT and EXTEND are normal control switches. During normal operation, AC and DC electrical power must be available on the airplane. Pressing RETRACT retracts the airstairs. The handrail extensions must be stowed prior to retracting the airstairs. Pressing EXTEND extends the airstairs.

STANDBY control switch must be held in while normal control switches are used when only DC power is available (Battery switch must be ON.).

STAIR OPER switch illuminates amber when the airstairs are extending or retracting.

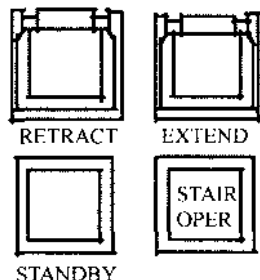
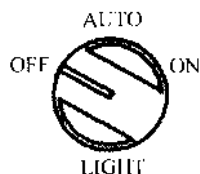
To extend the airstairs, the flight attendant opens the forward entry door to locked position first, then pushes and holds the EXTEND switch until extension is complete. If the

airstairs are extended in the standby mode, the flight attendant pushes and holds the EXTEND switch and the STANDBY switch until extension is complete. For passenger safety, upper handrails are attached to support brackets inside the entry door after the airstairs are extended.

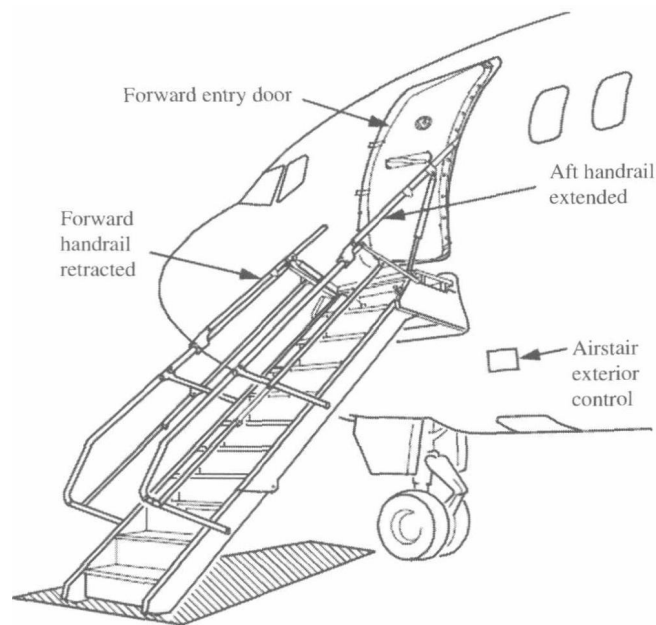
Prior to airstairs retraction, the flight attendant must confirm handrail extensions are properly stowed, then pushes and holds the RETRACT switch until retraction is complete. If it is retracted in the standby mode, the flight attendant pushes and holds the STANDBY switch and the

RETRACT switch until retraction is complete, then releases the control switch.

Operation of airstairs in winds exceeding 40 knots is not recommended. Do not move



Forward Airstair



Airstair (Door in Cocked Position)

the airplane with the airstairs extended.

New Words

identical [ai'dentikəl]

spring-assisted

hinge [hɪndʒ]

gauge [ɡedʒ]

dedicated [ˈdedɪkeɪtɪd]

attach [ə'tætʃ]

bracket [ˈbrækɪt]

arm [ɑ:m]

disarm [dɪs'ɑ:m, dɪz-]

rotate [rəu'teɪt]

swing [swɪŋ]

parallel [ˈpærəlel]

jetway

prior [ˈpraɪə]

pushback

fitting [ˈfɪtɪŋ]

certify [ˈsə:tɪfaɪ]

floatation [fləu'teɪʃən]

adverse [ˈædvə:s]

assess [ə'ses]

lever [ˈli:və, ˈlevə]

release [ri'li:s]

retraction [ri'trækʃən]

extension [ɪks'tenʃən]

tread [tred]

strap [stræp]

standby [ˈstændbaɪ]

knot [nɒt]

adj. 同一的, 同样的

adj. 弹簧助力的

n. (门、盖等的) 铰链

n. 量表, 计量器

adj. 专用的

vt. 缚上, 系上, 贴上

n. 支架

v. 予位

v. 解除予位

v. 转动

v. 旋转

adj. 平行的

n. 廊桥

adv. 在前, 居先

n. (飞机) 推出

n. 装配, 装置

v. 证明 (某物是合格的)

n. 漂浮

adj. 不利的

vt. 估定, 评定

n. 操作杆

vt. 松开, 解开, 放开

n. 收回

n. 伸展, 伸长

n. 梯级, 踏板

n. 窄带, 皮带

n. 备用

n. (绳等的) 结; 节 (船速, = 海里/小时)

Technical Terms

evacuation slide	撤离滑梯
assist handle	辅助手柄
pressure gauge	压力表
dedicated assist space	专用辅助区
observation window	观察窗
gust lock	镇风锁
girt bar	滑梯连接杆, 戈特棒
manual inflation handle	人工充气手柄
disconnecting handle	断开手柄
flight lock system	飞行锁系统
sliding window	滑动窗
escape rope	撤离绳
passenger stairs	客梯车
tread light	梯级灯

Notes

1. A single lane slide is contained in the lower inboard face of each cabin door. 单通道滑梯存放在每个舱门内部下侧。
注: 飞机上的滑梯分为单通道和双通道两种。单通道滑梯常用于陆地撤离, 跳滑梯时一次仅能一人往下跳; 双通道滑梯陆地、水上撤离均可使用, 跳滑梯时一次可以两人同时往下跳。
2. This is the visual warning that the girt bar has been attached to the floor brackets and the slide will automatically deploy when the door is opened. 这是一个可视警告, 表示连接杆还附在地板支架上, 如果舱门被打开, 滑梯将自动放出。
注: 此句子语法结构比较复杂, that 引导的名词性从句充当 warning 的同位语, 在同位语从句中 when 引导的从句作时间状语。that 引导同位语从句时和引导定语从句时语法结构不同。引导同位语从句时 that 为从属连词, 在从句中没有任何意义, 只起连接作用; 引导定语从句时 that 为关系代词, 它除了起连接作用, 还在定语从句中充当一定成分, 并且在意义上代表先行词。
3. The flight attendant must grasp the assist handle on the door with one hand, and with the other hand grasp the assist handle located beside the door inside of the airplane, push the door outward to the full open position. When the door is fully open and parallel to

the fuselage, it will lock and remain open. The final step is to connect with a jetway or passenger stairs or to extend the air stairs for passengers to disembark. 乘务员必须一只手抓住舱门上的辅助把手, 另外一只手抓住位于机内舱门旁的辅助把手, 把舱门推至全开位置。当舱门完全打开并与机身平行时, 它会锁定并保持在打开位置。最后对接廊桥或客梯车或放出自备梯以便旅客下机。

4. As the door opens, the slide falls out through the doorway. As it free-falls from the doorway approximately 15 inches, the slide inflates automatically. If the slide does not inflate, pull the red manual inflation handle located on the right side of the slide near the doorsill. 舱门打开时, 滑梯从舱门口掉出来。当滑梯从舱门口自由下落大约 15 英寸时会自动充气。如果滑梯未充气, 拉一下位于舱门门槛附近、滑梯右侧的红色人工充气手柄。
5. The escape slides are not certified as life rafts, but may be used in a ditching situation as a floatation device. To release the slide from the airplane, flight attendants must lift the flap at the top of the slide and pull the disconnecting handle. 撤离滑梯不是 (局方) 认证的救生船, 但水上撤离时可以用作漂浮装置。乘务员必须揭开滑梯顶部的搭链, 拉一下断开手柄, 滑梯与飞机脱离。
6. Preflight flight attendants must ensure that the plastic cover is installed over the handle and personally brief the passengers sitting at the exit row that it will be their responsibility to assess conditions and open the overwing exit in the event of an emergency. 起飞前乘务员必须确认手柄上面有塑料盖, 并对坐在出口座位旁边的旅客单独介绍, 万一出现紧急情况他们要负责评估状况和打开翼上紧急出口。
7. The handrail extensions must be stowed prior to retracting the airstairs. 自备梯收起前, 扶手拉出部分必须收好。
8. Operation of airstairs in winds exceeding 40 knots is not recommended. 风速超过 40 节时建议不要操作自备梯。

注: 节是速度单位, 1 节相当于 1.852 公里/每小时。

Exercises

I. Please answer the following questions.

1. How many exits (including for emergency use) are there onboard B737-700? Where are they?
2. What are the functions of entry doors and service doors?
3. Where is the slide?
4. What's the function of the dedicated assist space?

5. What's the function of the red warning flag?
6. What are the procedures to disarm cabin doors?
7. What are the procedures to open the cabin door?
8. What is the flight attendant going to do if the slide fails to inflate?
9. How is the overwing emergency exit operated?
10. In what situation can the forward airstairs not be operated?

II. Please fill in the blanks with the words given. Change the form where necessary.

certify	parallel	panel	retract	evacuation	pressurization
hook	standby	identical	assess	adverse	hatch

1. She looked at the house and _____ its market value.
2. _____ circumstances forced him to close his business.
3. She wore the _____ dress on both occasions.
4. Without engine power, the aircraft _____ system had failed.
5. Some passengers evacuated successfully from the overwing _____.
6. I _____ the above information is true and accurate.
7. They needed a _____ generator in case the electrical power failed.
8. Two _____ lines will never cross with each other.
9. Please hang your coat on the _____ when you come in.
10. The undercarriage of the aircraft could not _____ after takeoff, so the captain had to return to the airport to make an emergency landing.

III. Please translate the following sentences into English.

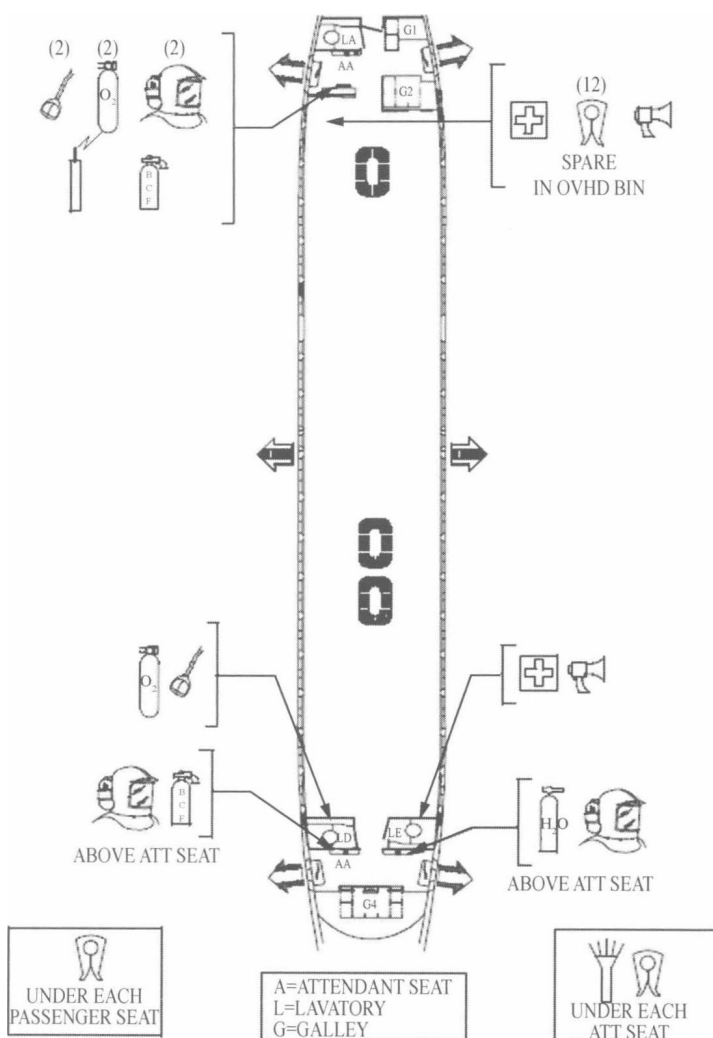
1. 红色警示旗越过观察窗表示舱门未解除预位，此时打开舱门会导致滑梯放出。
2. 推开舱门时，乘务员应抓住舱门旁的辅助把手，以免不小心掉下飞机。
3. 把滑梯连接杆从地板支架中取出挂在舱门下，可以解除舱门预位。
4. 起飞前，乘务员必须确认滑梯压力表的指针在绿区内。
5. 紧急情况下，乘务员打开舱门前，必须确认舱门处于预位状态，这样滑梯才能充气放出。
6. 水上撤离时，滑梯不能当作救生筏使用，但可以作为漂浮装置。
7. 把翼上紧急出口门框上的手柄往下拉，翼上紧急出口将自动往上、往外收起。
8. 空中飞行时，飞行锁将自动锁定翼上紧急出口以保证旅客安全。
9. 当机场没有廊桥、客梯车等设备时，乘务员可放出飞机的自备梯供旅客下飞机。
10. 自备梯位于前登机门下方，操作电门在前乘务员面板上。

IV. Please translate the following passage into Chinese.

To open the door and deploy the slide in a non-normal situation, flight attendants must assess the escape route conditions by observing the cabin interior and airplane exterior conditions to identify usable escape exits. Before operating the door, they must ensure the airplane has stopped and the engines are shut down, verify the girt bar is fastened to the floor brackets, then rotate the door handle up and fully aft, push the door until it is in the full open position with the girt bar fastened to the floor brackets and locked against the fuselage. The slide should deploy and inflate automatically in about four seconds. In certain adverse airplane attitudes, cabin attendants can direct two able-bodied passengers to assist in pushing the door out and forward to the open position.

Lesson 6 Emergency Equipment

Once flight attendants are on the airplane, they will determine the exact location of each piece of emergency equipment and check their serviceability. The corresponding signs of the emergency equipment are marked clearly on the door of the stowage bins.



B737-600/-700 with Optional Emergency Equipment

Oxygen Systems

There are two independent oxygen systems installed on the airplane, one for the passengers and flight attendants, and the other one for the flight deck.

The passenger oxygen system is supplied by individual chemical generators. There are four passenger oxygen masks and one chemical oxygen generator above the passenger seats in each Passenger Service Unit (PSU). Oxygen flows from a PSU generator when any mask hanging from the PSU is pulled. An in-line green flow indicator confirms that oxygen is flowing to each oxygen mask. The masks drop down automatically if cabin altitude exceeds approximately 14 000 feet or when the flight deck positions the oxygen switch to ON. Oxygen flows for approximately 12 minutes and cannot be shut off. If the masks fail to drop from a PSU, the cover of the oxygen compartment can be opened manually by inserting a hair pin or a thin rod into the hole of the compartment cover.

To start the flow of oxygen, passengers pull one mask, place the mask over the nose and the mouth, and breathe normally. If the passenger travels with someone who may need assistance, he should put on his own mask first and then secure the mask for the other person. When using the passenger oxygen, the NO SMOKING sign should be strictly observed. Once the system is activated, the flow of oxygen is constant, whether or not the mask is being worn. Do not use the passenger oxygen with cabin altitude below 14 000 feet when smoke or an abnormal heat source is present. The use of the passenger oxygen does not prevent the passengers from breathing smoke in. Air breathed in is a mixture of oxygen and cabin air which does great harm to the passengers.

Each flight attendant station and the lavatories are equipped with two masks which operate the same as the passenger oxygen system.

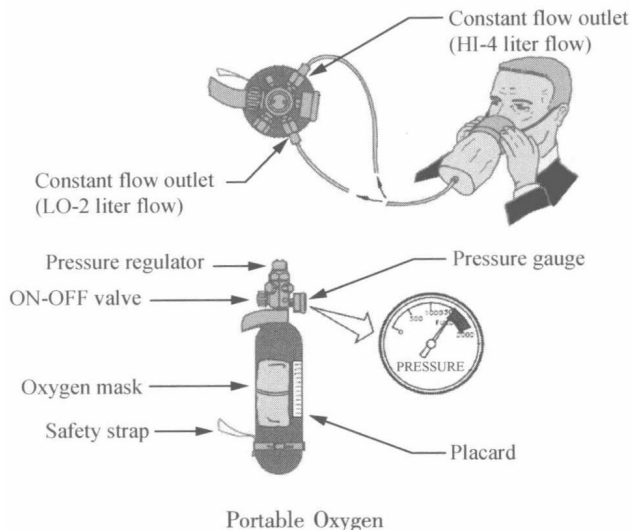
The cockpit system is a high pressure gaseous, diluter-demand system with individual masks and regulators for each cockpit crew member.

There are portable oxygen bottles stowed in suitable locations in the passenger cabin for first aid and supplemental use. These cylinders are fitted with a pressure gauge, a pressure regulator, an ON-OFF valve and a disposable mask. All bottles are the same in size and capacity. The cylinders are pressurized to 1 800 psi. At this pressure and a temperature of 70 °F, the cylinders have a capacity of 311 or 120 liters of free oxygen. The cylinders have two outlets, supplying oxygen at the rate of 2 liters per minute for walk-around or 4 liters per minute for first aid. If oxygen flows at a rate of 2 liters per minute (lpm), it can last 155 or 60 minutes; if at a rate of 4 liters per minute (lpm), it can last 78 or 30 minutes.

The following items are recommended for a preflight check of the portable oxygen bottles; check ON-OFF valve is off; pressure is in the FULL range; the mask is attached to

the bottle. If portable oxygen is needed in-flight, it is recommended that the flight crew use the safety strap. They should remove the mask from the plastic bag, open the dust cover, insert and attach fitting, rotate the ON-OFF valve fully counterclockwise and place the mask over the nose and the mouth of the person in need.

Protective Breathing Equipment (PBE) or smoke hoods are installed in the passenger cabin. The smoke hoods provide oxygen supply and smoke protection, and are to be used when fighting a fire, esp. when there is a lot of smoke in the cabin. The smoke hood is placed over the head and, when activated, it provides approximately 15 minutes of oxygen. Detailed operating instructions are placarded on the container.

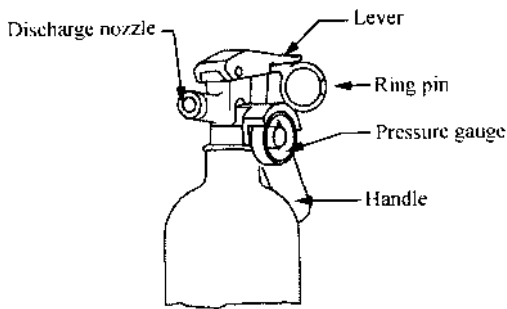


Fire Extinguishers

Water and Halon fire extinguishers are located in the passenger cabin and the flight deck. Each class of fire requires specialized actions. Using the wrong extinguisher may do harm than good. For example, water on flammable liquid fires will spread the fire, and on a live electrical fire could cause severe shock or death. For flight attendants own protection, they should know these basic types, and how to use them and why.

Class of Fires	Extinguisher Type
Class A: combustible materials (paper, wood, fabric, rubber, certain plastics and etc.)	Water fire extinguisher
Class B: flammable liquids (gasoline, oils, greases, paints, burning liquids and etc.)	BCF (Halon)
Class C: live electrical (electrical, electronic equipment, galley equipment and etc.)	BCF (Halon)
Class D: metals	BCF (Halon)

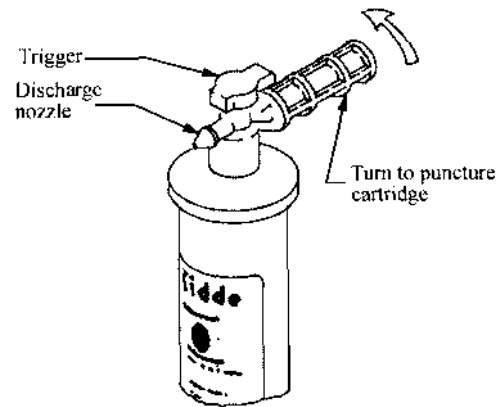
Halon fire extinguishers contain a liquefied gas agent under pressure. The pressure indicator shows three ranges: acceptable, recharge and overcharged. A safety pin with a pull ring prevents accidental trigger movement. When released, the liquefied gas agent vaporizes and extinguishes the fire. The extinguisher is effective on all types of fires, but is used primarily on electrical, fuel and grease fires. Its effective distance is 2 ~ 3 meters and normally can last 9 ~ 12 seconds.



Halon Fire Extinguisher

Pre-flight flight attendants will check the pressure gauge in green band and the ring pin in place with seal intact. For electrical fires, the flight attendant must remove the power source as soon as possible and avoid discharging directly on persons.

Water fire extinguishers contain a solution of water mixed with antifreeze. Water fire extinguishers are to be used on fabric or paper fires only. Its effective distance is 2 ~ 3 meters and normally can last 40 seconds. To use the water fire extinguisher, the flight attendant must remove it from stowage, rotate the handle fully clockwise, aim the nozzle at the base of the fire and press the trigger. Pre-flight, flight attendants will check that the safety wire and seal on the handle are intact.



Water Fire Extinguisher

If a fire extinguisher is to be discharged in the flight deck area, all flight crew members must wear oxygen masks and use 100% oxygen with emergency selected.

Miscellaneous Emergency Equipment

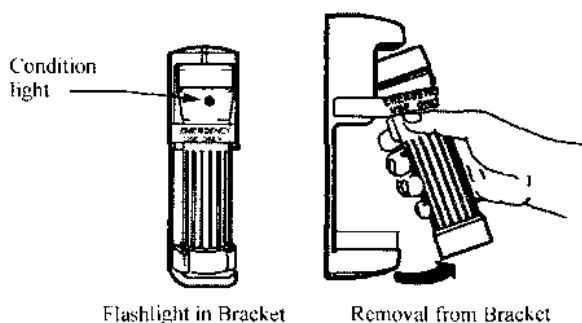
The Emergency Locator Transmitter (ELT) or the radio beacon can operate in water or on land to aid in the detection and location of aircraft, and people in need of immediate assistance. The basic purpose of ELT is to get people rescued within the so-called "golden day" (the first 24 hours following a traumatic event) during which the majority of survivors can usually be saved. Presently, most aircraft operators are required to carry an ELT and have the option to choose either a 121.5 MHz ELT (older generation) or a 406 MHz ELT.

Most transmitters are brightly colored and waterproof, and have a useful life of 10 years. They can operate across a range of conditions (-40°C to $+40^{\circ}\text{C}$), and transmit for 24 to 48 hours. It is stowed near a jumpseat or in an overhead bin.

Portable, battery-powered megaphones provide the flight crew another method of voice amplification that can support effective passenger management, for example, giving evacuation orders to passengers during an aircraft evacuation. Megaphones complement the PA system and the aircraft interphone system by enabling flight crew and cockpit crew to communicate safety information and notify passengers during aircraft emergencies and other non-routine situations. Generally, two megaphones are located in the cabin, one in the forward and one in the aft, readily accessible to a normal flight attendant seat.

There are two first aid kits onboard for the treatment of injuries and illness that may occur in-flight. Each first-aid kit must be accessible to the flight attendants, generally one in the front cabin and one in the aft. It contains such items as bandages, antiseptic swabs, arm and leg splints, scissors and etc. They should be installed securely with seals intact. If items from any first aid kit are used, the purser should notify the responsible personnel after landing so that items used may be replaced. Besides, at least one medical kit is installed in the cabin and must be accessible to the flight attendant, but is for use only by medical professionals. It must stow a blood pressure cuff, a stethoscope, plastic airways to deliver oxygen to help with breathing, and protective latex gloves, etc.

Flashlights are located at each flight attendant station. They provide a readily accessible, high intensity, portable light to aid in an evacuation of an airplane under poor lighting conditions or for other emergency service. It illuminates automatically when it is removed from the stowage bracket. A battery indicator light flashes every three or four seconds to indicate adequate power. The light can be extinguished only by placing the flashlight back into the stowage bracket. The batteries can't be recharged. Flashlights have a minimum duration of 30 minutes and a maximum of 4 hours.



There is one emergency crash axe onboard, which is accessible to the crew but inaccessible to passengers during normal operations. If access is blocked for whatever reason, emergency cut-in using a crash axe should be in the area of the doors, windows, or windscreen. The crash axe may also be required to obtain access of a suspected electrical

fire behind a wall. But try to avoid structural areas of the fuselage where use of the axe might damage fuel, electrical, or oxygen lines, causing an explosion and/or fire.

Under each passenger seat and each flight attendant seat, behind the seat of the flight crew there is a life vest. On some aircraft, baby life vests can also be found in the overhead compartment in the cabin. The color of the life jackets for passengers is yellow while it is red for the crew. They are designed to keep individuals afloat while in water. When the aircraft has to make a ditching, both the flight crew and the passengers are required to put on the life vest but not allowed to inflate it before they leave the cabin except infants and passengers with upper limbs deformity.

There are two lifelines installed above each overwing exit door frame. If evacuation is needed from the overwing exits, passengers can use it as a handhold to walk out on the wing because the surface of the wing may be slippery. One end of the lifeline is attached to the hatch frame, and the other end to a ring on the top surface of the wing.

New Words

serviceability [ˌsɜːvɪsəˈbɪlɪti]	<i>n.</i> 有用性, 适用性
corresponding [ˌkɒrɪsˈpɒndɪŋ]	<i>adj.</i> 相应的
hang [hæŋ]	<i>vi.</i> 悬着, 垂下
confirm [kənˈfɜːm]	<i>vt.</i> 确定, 确认
exceed [ɪkˈsiːd]	<i>vt.</i> 超过, 超出
insert [ɪnˈsɜːt]	<i>vt.</i> 插入, 嵌入
rod [rɒd]	<i>n.</i> 杆, 棒
observe [əbˈzɜːv]	<i>vt.</i> 遵守, 服从
constant [ˈkɒnstənt]	<i>adj.</i> 持续的
abnormal [æbˈnɔːməl]	<i>adj.</i> 反常的, 异常的
mixture [ˈmɪkstʃə]	<i>n.</i> 混合, 混合物
gaseous [ˈɡæsiəs, ˈgeɪzjəs]	<i>adj.</i> 气体的, 气态的
diluter [daɪˈljʊtə, diˈl-]	<i>n.</i> 稀释剂
regulator [ˈregjuleɪtə]	<i>n.</i> 调节器, 调速器, 调整器
cylinder [ˈsɪlɪndə]	<i>n.</i> 圆筒, 圆柱体
disposable [dɪsˈpəʊzəbl]	<i>adj.</i> 使用后易处理的, 一次性的
outlet [ˈaʊtlet, -lɪt]	<i>n.</i> 出口, 电源插座
counterclockwise [ˌkaʊntəˈklɒkwaɪz]	<i>adv.</i> 反时针方向
placard [ˈplækɑːd]	<i>v.</i> 张贴

flammable [ˈflæməbl]
 live [laiv]
 shock [ʃɒk]
 combustible [kəmˈbʌstəbl]
 fabric [ˈfæbrɪk]
 gasoline [ˈgæsəliːn]
 grease [ɡreɪs]
 liquefy [ˈlikwɪfaɪ]
 agent [ˈeɪdʒənt]
 vaporize [ˈveɪpəraɪz]
 pin [pɪn]
 seal [siːl]
 intact [ɪnˈtækt]
 solution [səˈljʊːʃən]
 antifreeze [ˈæntɪˈfriːz]
 clockwise [ˈklɒkwaɪz]
 trigger [ˈtrɪɡə]
 wire [ˈwaɪə]
 miscellaneous [ˌmɪsiˈleɪnjəs, -niəs]
 locator [ləʊˈkeɪtə]
 transmitter [trænzˈmɪtə]
 beacon [ˈbiːkən]
 rescue [ˈreskjʊː]
 traumatic [trɔːˈmætɪk]
 survivor [səˈvaɪvə]
 waterproof [ˈwɔːtəpruːf]
 megaphone [ˈmegəfəʊn]
 amplification [ˌæmplɪfɪˈkeɪʃən]
 complement [ˈkɒmplɪmənt]
 readily [ˈredɪli]
 accessible [əkˈsesəbl]
 bandage [ˈbændɪdʒ]
 antiseptic [ˌæntɪˈseptɪk]
 swab [swɒb]
 splint [splɪnt]
 scissors [ˈsɪzəz]

adj. 易燃的, 可燃性的
adj. 充电的, 带有电流或充满电能的
n. 休克
adj. 易燃的
n. 织品, 织物, 布
n. 汽油
n. 油脂
v. (使) 液化
n. 制剂, 引起变化的物质
v. (使) 蒸发
n. 销, 栓
n. 封铅, 封条, 密封
adj. 完整无缺的, 尚未被人碰过的
n. 溶液
n. <美> [化] 防冻剂
adv. 顺时针方向地
n. 起动装置; 触发器
n. 金属丝, 电线
adj. 各色各样混在一起的
n. (声波) 探测器, 定位器, 定位物
n. 发报机
n. 信标, 无线电发送器
n. 援救, 营救
adj. 外伤的, 创伤的
n. 生还者
adj. 防水的, 不透水的
n. 扩音器, 喇叭
n. 扩大
vt. 补充, 补足
adv. 容易地; 乐意地
adj. 易得到的, 易接近的
n. 绷带
adj. 防腐的, 杀菌的, 消过毒的
n. 药签
n. (外科用的) 夹板
n. 剪刀

professional [prə'feʃənl]	<i>n.</i> 专业人员, 从事某项职业的人
cuff ['kʌf]	<i>n.</i> 橡皮箍袖带
stethoscope ['steθəskəʊp]	<i>n.</i> 听诊器
airway ['eəwei]	<i>n.</i> (肺的) 气道; (麻醉时用的) 导气管
latex ['leiteks]	<i>n.</i> [植] 橡胶
flashlight ['flæʃlaɪt]	<i>n.</i> 手电筒
adequate ['ædɪkwɪt]	<i>adj.</i> 适当的, 足够的
duration [dʒuə'reɪʃən]	<i>n.</i> 持续时间
axe [æks]	<i>n.</i> 斧
windscreen ['wɪnskri:n]	<i>n.</i> 风挡玻璃
structural ['strʌktʃərəl]	<i>adj.</i> 结构的, 建筑的
explosion [ɪks'pləʊʒən]	<i>n.</i> 爆炸
afloat [ə'fləʊt]	<i>adj.</i> 飘浮的
limb [lɪm]	<i>n.</i> 肢
deformity [di'fɔ:mɪti]	<i>n.</i> 残缺, 残疾
lifeline ['laɪf,laɪn]	<i>n.</i> 救生绳
handhold [ˌhænd'həʊld]	<i>n.</i> 栏杆扶手
slippery ['slɪpəri]	<i>adj.</i> 滑的, 光滑的

Technical Terms

disposable mask	一次性面罩
dust cover	防尘帽
Protective Breathing Equipment (PBE)	呼吸保护设备
smoke hoods	防烟面罩
Halon fire extinguisher	海伦灭火瓶
water fire extinguisher	水灭火瓶
Emergency Locator Transmitters (ELT)	紧急定位发报机
first aid kit	急救箱
blood pressure cuff	血压计
plastic airways	口咽气道
emergency crash axe	应急斧
life vest	救生衣

Notes

1. Oxygen flows from a PSU generator when any mask hanging from the PSU is pulled. An in-line green flow indicator confirms that oxygen is flowing to each oxygen mask. 当从旅客服务组件拉下任意一个氧气面罩，来自旅客服务组件的氧气开始流动。软管里的绿色流量指示器表明氧气正在流向每个氧气面罩。
2. If the masks fail to drop from a PSU, the cover of the oxygen compartment can be opened manually by inserting a hair pin or a thin rod into the hole of the compartment cover. 如果氧气面罩没有从旅客服务组件中掉下，把发卡或细棒插入氧气储藏柜盖板中的小孔可以人工打开盖板。
3. The cockpit system is a high pressure gaseous, diluter-demand system with individual masks and regulators for each cockpit crew member. 驾驶舱氧气系统是一套高压稀释系统，每个飞行员有自己的氧气面罩和调节开关。
4. These cylinders are fitted with a pressure gauge, a pressure regulator, an ON-OFF valve and a disposable mask. 便携式氧气瓶都配有一个压力表、一个压力调节器、一个开关阀门和一个一次性面罩。
5. The cylinders have two outlets, supplying oxygen at the rate of 2 liters per minute for walk-around or 4 liters per minute for first aid. 氧气瓶有两个流量出口，一个出口用于客舱巡视，供氧流量为2升/分钟，另一个用于急救，流量为4升/分钟。
6. If portable oxygen is needed in-flight, it is recommended that the flight crew use the safety strap. They should remove the mask from the plastic bag, open the dust cover, insert and attach fitting, rotate the ON-OFF valve fully counterclockwise and place the mask over the nose and the mouth of the person in need. 如果飞行中需要使用便携式氧气瓶，建议乘务员使用安全带。乘务员先从塑料袋中取出面罩，打开防尘帽，插入连接装置，最大限度逆时针旋转开关阀门，然后把面罩罩在需要用氧的旅客的口鼻处。

注：safety strap 和 seat belt 的不同含义。safety strap 是指氧气瓶上的安全带，乘务员在客舱巡视时可以用安全带把氧气瓶背在身上；seat belt 是指座位上的安全带。

7. Using the wrong extinguisher may do harm than good. 灭火瓶用错了可能得不偿失。
注：do harm than good 的意思是“得不偿失”或“弊大于利”。
8. A safety pin with a pull ring prevents accidental trigger movement. When released, the liquefied gas agent vaporizes and extinguishes the fire. 带有拉环的安全销可防止意外触动触发器。拉出拉环时，液化气触媒剂汽化（喷出），扑灭火源。
9. Megaphones complement the PA system and the aircraft interphone system by enabling

flight crew and cockpit crew to communicate safety information and notify passengers during aircraft emergencies and other non-routine situations. 扩音器是旅客广播系统和内话系统的补充。在紧急和其他非常规状况下，飞行员和乘务员能相互沟通安全信息和通知旅客。

10. Besides, at least one medical kit is installed in the cabin and must be accessible to the flight attendant, but is for use only by medical professionals. It must stow a blood pressure cuff, a stethoscope, plastic airways to deliver oxygen to help with breathing, and protective latex gloves, etc. 除此之外，客舱里至少要配备一个应急医疗箱且便于乘务员取用，但仅限于有医生资格的人员使用。里面必须有血压计、听诊器、用于输氧帮助呼吸的口咽气道和带保护功能的橡胶手套。
11. If access is blocked for whatever reason, emergency cut-in using a crash axe should be in the area of the doors, windows, or windscreen. The crash axe may also be required to obtain access of a suspected electrical fire behind a wall. 如果某种原因通道被堵，可以用应急斧紧急劈开舱门、舷窗或风挡玻璃。如果怀疑舱壁内电气失火，也可用应急斧劈开舱壁。

Exercises

I. Please answer the following questions.

1. Under what conditions will the oxygen masks drop?
2. What's the main difference between the emergency oxygen system and the portable oxygen system?
3. What functions do the two outlets of the portable oxygen bottle have?
4. What items should be focused on during the pre-flight check of the portable oxygen bottle?
5. When will the flight crew put on PBE or smoke hoods?
6. What are the differences between Halon fire extinguishers and water fire extinguishers?
7. What items should flight attendants pay special attention to during the pre-flight check of Halon fire extinguishers?
8. What are the main characteristics of ELT?
9. What are the differences between first aid kits and medical kits?
10. When can the passengers inflate their life vests?

II. Please fill in the blanks with the words given. Change the form where necessary.

disposable	placard	flammable	portable	secure	trigger
confirm	readily	duration	deformity	handhold	intact

1. He _____ accepted the invitation to dinner.
2. The R2 service door escape slide operation _____ is just next to the door.
3. We have prepared a _____ oxygen bottle on our plane to give sick passenger an emergency treatment.
4. The _____ of pain was prolonged.
5. The glasses remained _____ after being dropped.
6. This mixture is dangerous, _____ and explosive.
7. He is grabbing tightly the _____ to keep himself balance.
8. _____ paper bags have been developed.
9. The recent airplane crash _____ my belief that stronger safety regulations are needed.
10. Passengers are required to _____ their seat belts before takeoff.

III. Please translate the following sentences into English.

1. 旅客座椅上方的每个旅客服务组件里包括 4 个氧气面罩和 1 个化学氧气发生器。
2. 旅客使用氧气面罩时应先戴好自己的面罩，然后再帮助他人。
3. 便携式氧气瓶低流量用于失压（decompression）发生后乘务员客舱巡视，高流量出口则用于急救。
4. 防烟面罩在客舱失火并伴有浓烟时使用。
5. 海伦灭火瓶主要用于电气、燃油等的失火。灭火时间可持续 9 ~ 12 秒。
6. 水灭火瓶里的水含有防冻液，故不能饮用。
7. 如果旅客广播系统失效，乘务员可用扩音器向旅客发出指令。
8. 起飞前乘务长必须检查急救箱的铅封是否完好。
9. 紧急撤离时，如果客舱照明较差，乘务员可用手电筒引导旅客找到出口。
10. 婴幼儿和上肢残疾的旅客穿好救生衣后可以在客舱里充气。

IV. Please translate the following passage into Chinese.

The Emergency Locator Transmitter (ELT) or the radio beacon can operate in water or on land to aid in the detection and location of aircraft, and people in need of immediate assistance. The basic purpose of ELT is to get people rescued within the so-called "golden day" (the first 24 hours following a traumatic event) during which the majority of survivors can usually be saved. Presently, most aircraft operators are required to carry an ELT and have the option to choose either a 121.5 MHz ELT (older generation) or a 406 MHz ELT. Most transmitters are brightly colored and waterproof and have a useful life of 10 years. They can operate across a range of conditions (-40℃ to +40℃), and transmit for 24 to 48 hours.

Lesson 7 Emergency Situations and Emergency Evacuation

Emergency Situations

Any emergency situation will never be expected to occur during the flight, but just in case it occurs, cabin crew must be well prepared. Passengers' safety is their greatest concern. Let's look at what emergency situations that may arise during flight: decompression, water leak in the cabin, dangerous goods onboard, fire or smoke in the cabin. If one of these situations occurs in-flight, procedures can be found in the emergency checklist which is required to keep in the cabin.

Most commercial aircraft are pressurized at a maximum cabin altitude of 8 000 feet, where it is possible to breathe normally without an oxygen mask. If the cabin altitude reaches 14 000 feet or higher, or a decompression occurs and hypoxia is possible, compartments containing the oxygen masks will open automatically, either above or in front of the passenger and crew seats, and in the lavatories. Oxygen masks may also drop on extremely rough landings or during severe turbulence if the oxygen mask panel becomes loose.

There are two types of decompression: slow decompression and rapid/explosive decompression. When rapid or explosive decompression occurs, dust flies in the cabin and the temperature drops below freezing. Water vapor in the cabin may immediately condense as fog. The warning lights would flash and/or warning horns would sound. The cabin oxygen system will activate. People onboard have only a few seconds of useful consciousness time to put on their oxygen mask before hypoxia occurs. Immediately, cabin crew should sit down at the nearest seat and put on the oxygen mask, and direct the passengers to do the same. Pull down the oxygen mask, oxygen will flow automatically and will last about 12 minutes. When oxygen flows, it cannot stop. While the masks are being used, the passengers are not allowed to leave their seats for any reason until it is safe to breathe without the emergency oxygen. Decompression is rare but has resulted in a number of fatal accidents. Failures range from sudden, catastrophic loss of airframe integrity (explosive decompression) to slow leaks or equipment malfunctions that allow cabin pressure to drop

undetected to levels that can lead to unconsciousness or severe performance degradation of the aircrew. Any failure of cabin pressurization above 3 000 metres (9 800 ft) requires an emergency descent to a level at which it is possible to breathe without the need for emergency oxygen, usually 10 000ft or the minimum safe altitude.

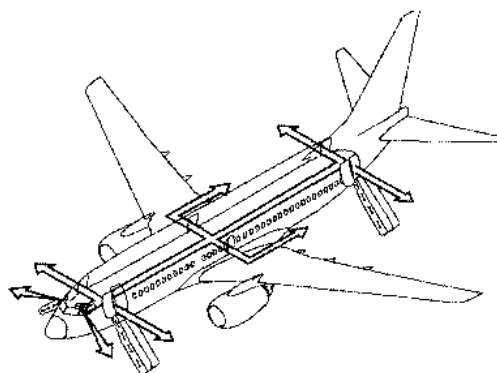
Another emergency situation is fire onboard. Most fires occur in the lavatories, after that probably in the galleys and then in the cabin. So flight attendants must check them regularly to prevent fire, esp. on a night flight. When a flight attendant sees a fire, she must start fire fighting immediately with the nearest appropriate extinguisher, inform and request help from other crew members. One crew is required to notify the captain the location of the fire and the progress of the fire fighting. Other flight attendants should remove all the materials that can be moved and shut off the electrical power if necessary. It might happen that there's a lot of smoke or poisonous gas in the fire and breathing is very difficult, so flight attendants must put on the smoke hood or PBE. If the fire is not immediately extinguished, flight attendants must remove all the portable oxygen cylinders from the vicinity of the fire and advise the passengers to stay seated and keep calm. If the fire produces excessive smoke and fumes inside the cabin, cabin crew must relocate passengers away from the area of severe smoke and fumes, instruct passengers to breathe through wet handkerchiefs or other appropriate materials. Passenger oxygen masks are not allowed to deploy. The oxygen system is for use only during a cabin pressure loss. When the fire is extinguished, a water fire extinguisher or other cooling liquid should be used to soak the smoldering material with water and prevent re-ignition.

If flight attendants find some suspicious luggage that no one has claimed, do not move it first. They should open it cautiously and check whether it can be moved. If it cannot be moved, they must leave it as it is and try to prevent accidental movements of the luggage. If it can be moved, they can move it to the floor of either of the two lavatories in the aft cabin and close the lavatory to the passengers, then take the extinguisher and oxygen bottle away, and make sure that passengers are at least five meters away.

Emergency Evacuation

If the emergency situation can't be controlled, the captain will decide to make an emergency landing. Normally the captain starts the evacuation signal or makes a PA announcement. After the airplane has stopped and evacuation has begun, one of the flight crew turns on the emergency lights switch. The interior and exterior emergency lights illuminate. The lights remain illuminated for 15 minutes. If the switch is in the ARMED position, even if the plane loses the electrical power, the emergency lights will come on automatically. If the flight crew does not turn on the emergency lights, there's an

emergency light switch on the AAP. The flight attendant sits close to the AAP is responsible to turn it on. If extra light is needed, emergency flashlights can be found at each of the flight attendant stations.



Emergency Evacuation Routes

Another important thing before evacuation is which exits can be used to evacuate the passengers. The attitude of the airplane can vary depending on the type of landing. The normal front and aft doorsill height to the ground is 2.67 meters and 2.92 meters. The length and the width of the slide are about 5.08 meters and 1.52 meters respectively. If the plane makes a nose gear up landing, the cabin crew will have to determine whether the aft cabin

doors could be used for passenger evacuation because they may be a little steep for the slide. If the plane makes a belly landing, overwing emergency exits cannot be used for evacuation because the engines may be on fire and explode. Whatever the airplane attitude is, flight attendant can use all the exits as long as there are no obstacles blocking the door.

If time permits, the purser must use the PA to brief the passengers (exits, brace positions, and other information, as required). The other cabin crew assign helpers, order the passengers to remove high heels and other sharp articles. All the people onboard must maintain brace position until the airplane comes to a complete stop.

When the plane stops and engines are shutdown, upon the captain's command, the purser activates the emergency evacuation signal. All the cabin crew must go immediately to their assigned locations and assess safety of inside and outside conditions. They must make sure the cabin door is armed so that the slide will automatically inflate. If the slide does not inflate, they can inflate it by pulling the manual inflation handle, then tell the passengers to release their seat belts and get out. Since the slides are single lane, it is very important to establish single lane flow to ensure a timely evacuation. The cabin crew should stand in the dedicated assist place and do not block the exit. If the exit is not usable, they must block it to prevent passenger evacuation, and redirect the passengers to the nearest usable exit. If evacuation is needed from the overwing exits, the cabin crew must ensure that seats around are not blocking it, then open the hatch, pull the life line from the door frame and attach it to a ring on the surface of the wing. After opening the door, the cabin crew shout the orders clearly and loudly to the passengers: "EVACUATE", "RELEASE YOUR SEAT BELTS", "GET OUT OF YOUR SEATS", "COME THIS WAY". They cannot evacuate the cabin until after checking the area of responsibility. If the cockpit does not participate in the

cabin evacuation, the purser is responsible for checking the cabin to make sure all the passengers are out before leaving the aircraft.

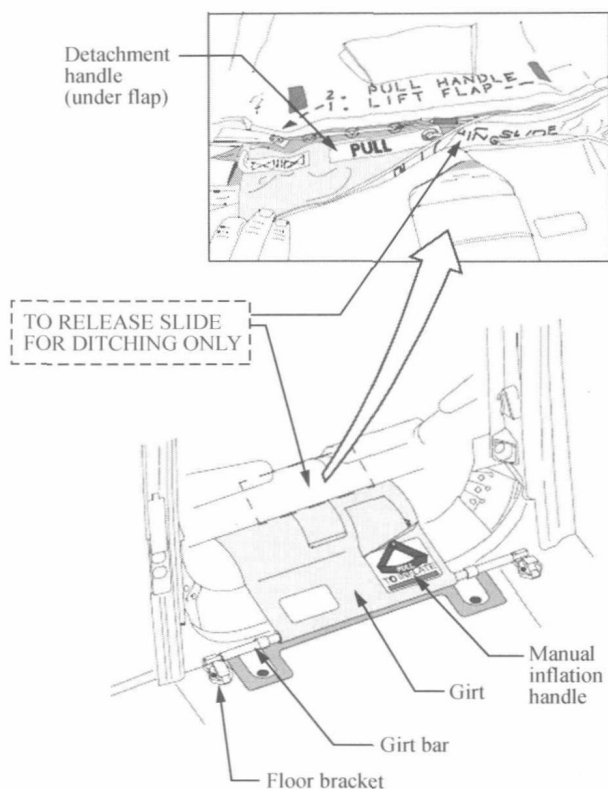
The cabin crew must make sure all the crew members and the passengers are at least 50 to 100 meters from the airplane and assist the passengers on the ground when necessary. The evacuation should take no more than 90 seconds.

The pilots can also use the cockpit slide windows to evacuate in an emergency. The two windows can be opened on the ground or in flight. If evacuation is needed from the cockpit for the flight crew, they can use the two escape ropes stowed in the overhead panel above the captain's and the first officer's seats. Opening the panel will make the rope drop automatically. The flight crew throw it outside the slide window and ensure the escape strap is securely fastened to the airplane, then the pilots sit on the window sill with upper body outside, grasp the escape rope tightly and slide down.

Ditching is an emergency landing on water. Analysis has shown that, in the event of a ditching, the aircraft should float at a depth and attitude favorable to safe evacuation. Ditching studies for the 737-700 indicate that with an aft center of gravity and high gross weight, the aft doors will be just below the water level. Opening the aft doors would seriously degrade the floatation characteristics of the airplane and therefore, it is recommended that the aft doors should NOT be opened during a ditching. The remaining exits, forward and overwing will provide sufficient ditching capability.

The escape slides are certified as floatation devices but not an approved survival raft. They may be used as floatation equipment by detaching the slide from the airplane. A quick release handle is provided near the top of the slide. This handle is protected by a cover and is placarded. After the escape slide is detached from the airplane, it will float. The overturned slide will support passengers remaining in the water. Handgrips are positioned along the sides of the slide.

Life rafts may be stowed in lowered ceiling compartments located near the forward and overwing exits. Depending on the size, the life raft is capable of handling either 46 or 56 passengers in normal operation. Prior to the opening of the forward cabin doors, preparations for ditching are similar to those for land evacuation. Before evacuation, passengers must be briefed on how to put on their life jackets, how and when to inflate them. When the slide is inflated and deployed, cabin crew evacuate passengers onto the life raft and instruct them to inflate their life vests. When the airplane is fully evacuated, the cabin attendant releases the life raft from the airplane by cutting the mooring line with the knife provided on life raft. If possible, move the life raft from fuel polluted waters and connect two or more life rafts using sea anchor lines.



Evacuation Slide Deployed

If people have to evacuate from the overwing exits, flight attendants get the lifeline, which is stored in the upper corner of the overwing exit opening and can be used as a handhold for passengers to walk out on the wing and step into a life raft, and attach it to a ring on the top surface of the wing; get the life raft pack from the stowage location, and secure the mooring line to a suitable anchor point; push the life raft pack through the overwing exit and inflate the life raft by pulling the inflation ring; pull the inflated life raft back near the wing using the mooring line; finally evacuate people onto the wing to board the life raft and instruct them to inflate their life vests.

If it is urgent and necessary to evacuate the passengers immediately due to an unplanned ditching, cabin crew should direct passengers to get out of the aircraft first. The life rafts should not be deployed or boarded unless time and conditions permit. The Emergency Locator Transmitter (ELT) and the survival kit must be taken from the airplane and carried onboard the life raft.

New Words

decompression [ˌdi:kəm'preʃən]

hypoxia [hai'pɒksɪə]

rough [rʌf]

severe [si'viə]

turbulence [ˈtɜ:bjuləns]

condense [kən'dens]

consciousness [ˈkɒnfəsnɪs]

rare [rɛə]

n. 释压、失压

n. [医] 组织缺氧, 氧不足

adj. 粗糙的, 粗暴的

adj. 剧烈的, 严重的

n. 颠簸, 湍流

v. (使) 浓缩, 精简

n. 意识, 知觉

adj. 罕见的, 很少发生的

catastrophic [ˌkætə'strɒfɪk]
 airframe ['eəfreɪm]
 integrity [ɪn'tegriti]
 malfunction [ˌmæl'fʌŋkʃən]
 undetected [ˌʌndɪ'tektɪd]
 degradation [ˌdeɡrə'deɪʃən]
 poisonous ['pɔɪznəs]
 excessive [ɪk'sesɪv]
 fume [fju:m]
 relocate ['ri:ləu'keɪt]
 handkerchief ['hæŋkətʃɪf]
 soak [səuk]
 smolder ['sməuldə]
 ignition [ɪg'niʃən]
 suspicious [sə'spɪʃəs]
 claim [kleɪm]
 cautiously ['kɔ:fəsli]
 accidental [ˌæksɪ'dentl]
 vary ['veəri]
 steep [sti:p]
 explode [ɪks'pləʊd]
 block [blɒk]
 ditching ['dɪtʃɪŋ]
 analysis [ə'neɪlɪsɪs]
 float [fləʊt]
 gravity ['ɡrævɪti]
 gross [ɡrəʊs]
 characteristic [ˌkærɪktə'rɪstɪk]
 sufficient [sə'fɪʃənt]
 capability [ˌkeɪpə'bɪlɪti]
 detach [dɪ'tætʃ]
 handgrip ['hændɡrɪp]
 mooring ['muərɪŋ]
 anchor ['æŋkə]
 pack [pæk]

adj. 悲惨的, 灾难的
 n. 机身
 n. 完整, 完全, 完整性
 n. 故障
 adj. 未被发现的
 n. 退化, 下降到低等的状况、水平
 adj. 有毒的
 adj. 过多的, 过量的
 n. (浓烈或难闻的) 烟, 气体
 v. 重新安置
 n. 手帕
 v. 浸, 泡, 浸透
 vi. 闷烧
 n. 点火, 点燃
 adj. 可疑的, 怀疑的
 vt. 认领
 adv. 慎重地
 adj. 意外的, 偶然的
 vi. 变化, 不同
 adj. 陡的, 大幅度倾斜的
 vi. 爆炸
 vt. 妨碍, 阻碍
 n. [航空] 水上迫降
 n. 分析, 分析报告
 vi. 浮动, 飘浮
 n. 重力
 adj. 总的, 毛重的
 n. 特性, 特征
 adj. 充分的, 足够的
 n. (实际) 能力, 性能
 vt. 分离, 分开
 n. 手柄
 n. (系泊船只或飞机的) 设备 (例如锚或链)
 n. 锚
 n. 一群, 一副

Technical Terms

emergency checklist	应急检查单
slow decompression	缓慢性释压
rapid /explosive decompression	快速 / 爆炸性释压
nose gear up landing	前起落架收起着陆
belly landing	机腹着陆
brace position	安全姿势, 防冲撞姿势
gross weight	总重, 毛重
survival raft	救生船
quick release handle	快速释放手柄
mooring line	系留绳
survival kit	救生包
anchor point	定位点

Notes

1. Any emergency situation will never be expected to occur during the flight, but just in case it occurs, cabin crew must be well prepared. 我们不希望飞行中出现任何紧急情况, 但是万一发生了, 乘务人员必须做好充分准备。

注: in case 意思是“万一、如果”, 是连词, 引导条件状语从句。

例: We have an auxiliary generator in case the electrical power fails.

我们有一台备用发电机, 万一停电时可以使用。

2. If the cabin altitude reaches 14 000 feet or higher, or a decompression occurs and hypoxia is possible, compartments containing the oxygen masks will open automatically, either above or in front of the passenger and crew seats, and in the lavatories. 如果在客舱高度达到或超过 14 000 英尺, 或在发生了释压和氧气可能不足时, 氧气面罩储藏柜盖板将自动打开, 旅客和机组座椅上面或前面的以及卫生间里的氧气面罩储藏柜里的氧气面罩会自动脱落。

注: 客舱高度和飞行高度的区别。客舱高度也叫做座舱高度, 是指增压后的客舱气压高度, 表示的是压力; 而飞行高度是指在空中至某一基准水平面的垂直距离。

3. Decompression is rare but has resulted in a number of fatal accidents. Failures range from sudden, catastrophic loss of airframe integrity (explosive decompression) to slow leaks or equipment malfunctions that allow cabin pressure to drop undetected to levels

that can lead to unconsciousness or severe performance degradation of the aircrew. 释压很少发生但会导致很多重大事故。从突然的、灾难性的机身整体结构破损到空气缓慢泄漏或设备故障,这些都让客舱压力下降到未被察觉到的程度,而这种程度会导致机组意识不清或执行职责能力大大降低。

注:第二句话语法结构较复杂, failure 是主语, range 是谓语, that allow cabin pressure to drop undetected to levels 定语从句的先行词为前面的名词短语, that can lead to unconsciousness or severe performance degradation of the aircrew 定语从句的先行词是 levels。

4. When the plane stops and engines are shutdown, upon the captain's command, the purser activates the emergency evacuation signal. 当飞机停下、发动机关闭后,一听到机长的命令,乘务长发出紧急撤离信号。

注: upon 在此句是指“在…后立即”,可以和 on 换用。

例: Some magazines pay upon acceptance, others upon publication.

一些杂志采用稿件后即付稿酬,另外一些则要到发表后才付。

5. Ditching studies for the 737-700 indicate that with an aft center of gravity and high gross weight, the aft doors will be just below the water level. Opening the aft doors would seriously degrade the floatation characteristics of the airplane and therefore, it is recommended that the aft doors should NOT be opened during a ditching. 对 737-700 水上迫降的研究表明由于飞机重心靠后,再加上总重较重,后舱门刚刚低于水位线。打开后舱门将严重减弱飞机的漂浮特性,因此建议水上迫降时一定不要打开后舱门。
6. A quick release handle is provided near the top of the slide. This handle is protected by a cover and is placarded. After the escape slide is detached from the airplane, it will float. The overturned slide will support passengers remaining in the water. Handgrips are positioned along the sides of the slide. 快速释放手柄位于滑梯顶端,上面有盖子保护并附有标牌。撤离滑梯与飞机分离后将漂浮起来。把滑梯翻转可以帮助水中的旅客。滑梯两侧都有手抓绳。
7. ...get the life raft pack from the stowage location, and secure the mooring line to a suitable anchor point; push the life raft pack through the overwing exit and inflate the life raft by pulling the inflation ring; pull the inflated life raft back near the wing using the mooring line... 从存储处取出救生筏包,把系留绳系在合适的定位点;从翼上出口推出救生筏包,拉充气环使救生船充气;然后往回拉系留绳,把充气的救生船拉回到机翼附近……

Exercises

I. Please answer the following questions.

1. What are the most common emergency situations onboard?
2. What are the symptoms (征兆) of explosive decompression?
3. What should the cabin crew do if explosive decompression occurs?
4. What is the cabin crew going to do when she finds the fire in the cabin?
5. Who is normally responsible for turning on the emergency lights?
6. What are the passengers required to do before a forced landing?
7. What orders are given to the passengers during evacuation?
8. How do the cockpit crew evacuate from the flight deck?
9. Why can't the passengers evacuate from the aft cabin doors in a ditching?
10. What emergency equipment must be taken in a ditching evacuation?

II. Please fill in the blanks with the words given. Change the form where necessary.

airframe	condense	vicinity	ignition	suspicious	soak
pack	consciousness	claim	attitude	catastrophic	integrity

1. I have _____ the report to make it as short as I can.
2. He has faced a _____ of troubles since the end of the war.
3. The police are _____ of his words because he already has a record.
4. A _____ illness made him lose hearing when he was six.
5. After an emergency treatment, she regained _____.
6. He told us there was no hotel in the _____.
7. They _____ to have discovered a cure for the disease.
8. Whether you could become an excellent flight attendant depending on your _____.
9. The severe turbulence destroyed the _____ of the aircraft, so the captain had to make an emergency descent.
10. She _____ the dirty clothes in water.

III. Please translate the following sentences into English.

1. 拉下氧气面罩，氧气开始流动，不能停止。供氧时间大约为 12 分钟。
2. 客舱失压后飞机应尽快下降到安全高度，使机上人员能自主呼吸。
3. 如果客舱失火并产生大量烟火和有毒气体，乘务员应在远离火源区戴上防烟面罩。

后灭火。

4. 乘务员把可疑物品放在后卫生间地板上后，应关闭该卫生间。
5. 当飞行员把应急灯电门设置在“自动”位时，即使飞机电力系统失效，应急灯也会自动亮。
6. 如果飞机迫降时是机腹着陆，不能从翼上紧急出口撤离旅客。
7. 紧急迫降时，机上所有人员必须保持安全姿势直到飞机完全停稳。
8. 紧急撤离时，乘务员应站在专用辅助区来指挥旅客撤离。
9. 拉一下快速释放手柄使滑梯与飞机分开。
10. 救生绳存放在翼上紧急出口的门框上方。

IV. Please translate the following passage into Chinese.

When the plane stops and engines are shutdown, upon the captain's command, the purser activates the emergency evacuation signal. All the cabin crew must go immediately to their assigned locations and assess safety of inside and outside conditions. They must make sure the cabin door is armed so that the slide will automatically inflate. If the slide does not inflate, they can inflate it by pulling the manual inflation handle, then tell the passengers to release their seat belts and get out. Since the slides are single lane, it is very important to establish single lane flow to ensure a timely evacuation. The cabin crew should stand in the dedicated assist place and do not block the exit. If the exit is not usable, they must block it to prevent passenger evacuation, and redirect the passengers to the nearest usable exit.

Lesson 8 The Next-Generation 737 Family

Similarities among the Next-Generation 737 Family

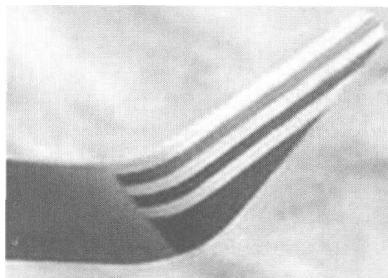
The 737, a short-to-medium range airplane, is based on a key Boeing philosophy of delivering added value to airlines with reliability, simplicity and reduced operating and maintenance costs.

The latest members of the Boeing 737 family, the 737-600/-700/-800/-900 models ranging from 110 to 220 seats in mixed-class configuration, continue the 737's preeminence as the world's most popular and reliable commercial jet transport. The Next-Generation 737 models build upon the strengths that made the 737 the world's most successful commercial airliner, while incorporating improvements and value-added technology designed for the 21st century. The entire 737 family has won more than 8 100 orders, 6 100 of which have been delivered. It is the best-selling commercial airliner in history and dominates the market for short-to-medium range routes.



The Next-Generation 737 Family

The winglet option increases the Next-Generation 737's lead as the latest and most technologically advanced airplane in its class. Winglets are wing tip extensions. Each blended winglet is 8 feet long, and 4 feet in width at the base, narrowing to approximately 2 feet at the tip. Blended winglets add approximately 5 feet to the airplane's total



Winglet

wingspan. The total wing area is increased by 25%, providing 30% more fuel capacity. All members of the new 737 family have the same wingspan. Winglets provide several benefits to airplane operators, such as saving on fuel, range extension, more payload carriage and reduced engine maintenance costs, etc. The Next-Generation 737's range is approximately 3 300 nautical miles (5 926 kilometers), an increase of up to 900 nautical miles over earlier 737 models. The airplanes

are capable of cruising to a maximum altitude of 41 000 feet, compared to 37 000 feet for

the 737-300/-400/-500 models, and 39 000 feet for the Airbus A320. The advanced wing design provides an economical cruise speed of 0.78 Mach — compared to 0.74 Mach for earlier 737 models — with capability of 0.82 Mach. These new technology winglets are now available on 737-700s, 737-800s and 737-900ER.

The passenger cabin on the Boeing Next-Generation 737s has a new look, providing passengers with comfortable, pleasing surroundings. The number of ceiling and wall panels is reduced, giving the entryway a smoother, cleaner look. All signs are located in assigned areas instead of being spread about the entryway. The curved ceiling panels offer up to 3 additional inches of headroom.

The combination of noise-dampening material against the airplane's interior skin and a new design for the sidewall air grill makes the cabin quieter for a more comfortable flight. The air grill design is also more secure.

A new handrail on the overhead stowage bins is offered for added passenger and flight attendant convenience. Optional, convertible seats make it possible to quickly change the passenger cabin to accommodate a variety of airline seat configuration requirements. The seat pitch also is easily changed and the seat rows can be added or removed as needed.

A moveable cabin divider also allows configuration changes between flights. New longer overhead stowage bins are 80 inches (203 centimeters) long and can carry up to 160 pounds (72.5 kg) worth of carry-on items. With new, larger stowage bins, more people can store their luggage closer to their seats, helping to reduce the anxiety they may have felt in the past. With more bags stowed above there is more leg room below.

The passenger service units have recently been updated. Airlines have the option to equip their airplanes with modern flat-panel video displays as part of the passenger entertainment system. The retractable liquid-crystal displays are mounted in the passenger service unit above the seats. A video monitor is positioned every two to three seat rows.

Cabin crews will experience increased functionality at a modernized, touch-screen attendant panel. The panel accommodates all existing cabin controls and adds controls for the new cabin lighting.

Differences among the Next-Generation 737 Family

Besides many similarities in the cabin among the Next-Generation 737 family, there are also a few differences. The main differences are as follows:

Different type has different thrust per engine. The thrust per engine is rated at up to 22 000 pounds for B737-600 while 26 400 pounds for B737-700 /-800/-900.

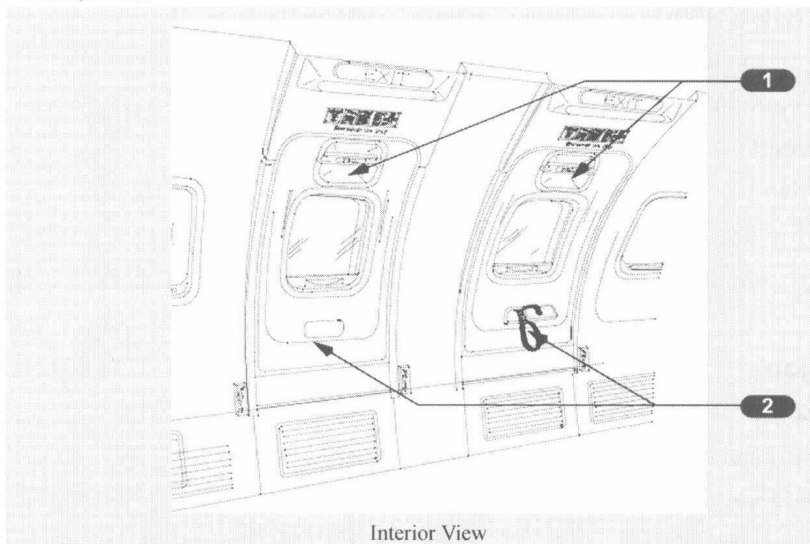
The Next-Generation 737 family has slight differences in its length and width. B737-600/-700/-900 is 34.40 meters wide while B737-800 is 35.79 meters wide. B737-600 is

the shortest among the family, and it is 31.20 meters long. B737-700 and B737-800 is 33.60 and 39.50 meters long respectively. B737-900 is the longest, 42.10 meters in length.

The maximum takeoff weight is about 57 600 kilograms for B737-600, 60 300 kilograms for B737-700, 70 500 kilograms for B737-800, and 79 000 kilograms for 737-900.

The 737-600 can carry 110 to 132 passengers while the 737-700 is capable of carrying 126 to 149 passengers, the 737-800 can seat 162 to 189 passengers and the 737-900ER can seat 180 to 220 passengers.

YX800, YX900



1 Interior handle

To open door.

- pull handle down and inward
- door opens out and up automatically.

2 Closing strap

Panel shown closed and open.

There are up to 4 flight attendant stations for 737-600 while 6 flight attendant stations for 737-700 /-800/-900.

The numbers of onboard lavatories may vary due to different passenger seating capacity and different requirements by airlines. Generally there are three lavatories for B737-600/-700 but there are four for B737-800/-900.

The number of the exterior emergency lights is also different. To illuminate the

overwing escape routes and ground contact area, two emergency lights are installed on each side of the fuselage for B737-600/-700 while three emergency lights are installed on each side of the fuselage for B737-800/-900.

For B737-600/-700 there are two overwing emergency exits located in the passenger cabin over the wings, one on each side of the fuselage. There are four overwing emergency exits for B737-800/-900, two on each side of the fuselage.

New Words

philosophy [fɪ'lɒsəfi]	<i>n.</i> 观点
reliability [rɪ'laɪə'bɪlɪti]	<i>n.</i> 可靠性
maintenance [ˈmeɪntɪnəns]	<i>n.</i> 维护, 保持
eminence [ˈemɪnəns]	<i>n.</i> 杰出, 卓越
strength [streŋθ]	<i>n.</i> 长处, 优点
deliver [dɪ'lɪvə]	<i>vt.</i> 交付
incorporate [ɪn'kɔ:pəreɪt]	<i>vi.</i> 合并, 混合
dominate [ˈdɒmɪneɪt]	<i>v.</i> 占优势, 在…中占首要、支配地位
winglet	<i>n.</i> 小翼
option [ˈɒpʃən]	<i>n.</i> 选择权, 选项
blend [blend]	<i>vt.</i> 混合
wingspan [ˈwɪŋspæn]	<i>n.</i> [空] 翼展
payload [ˈpeɪləʊd]	<i>n.</i> 有效载荷
entryway [ˈentri,wei]	<i>n.</i> 入口通道
curve [kə:v]	<i>vt.</i> 使弯曲, 使成曲线
headroom [ˈhedru:m]	<i>n.</i> 头上空间, 净空高度
combination [ˌkɒmbɪ'neɪʃən]	<i>n.</i> 结合, 联合, 合并
dampen [ˈdæmpən]	<i>v.</i> 消除, 抑制, 压抑
grill [grɪl]	<i>n.</i> 格栅
update [ʌp'deɪt]	<i>v.</i> 更新
optional [ˈɒpʃənəl]	<i>adj.</i> 可选择的, 随意的
convertible [kən'veɜ:təbl]	<i>adj.</i> 可改变的, 可转换的
accommodate [ə'kɒmədeɪt]	<i>vt.</i> 适应, 使配合, 向…提供
pitch [pɪtʃ]	<i>n.</i> 距离
divider [dɪ'vaɪdə]	<i>n.</i> 间隔物, 屏风
flat [flæt]	<i>adj.</i> 平面的, 水平的

crystal [ˈkristl]	n. 水晶
monitor [ˈmɒnɪtə]	n. 监视器, 监控器
functionality [ˌfʌŋkʃəˈnæləti]	n. 功能性
similarity [ˌsɪmiˈlærɪti]	n. 相似, 相似点

Technical Terms

blended winglet	融合型翼梢小翼
nautical mile	海里
seat pitch	座位排距
cabin divider	客舱隔帘
leg room	腿部空间
flat-panel video display	平板视频显示器
liquid-crystal display	液晶显示器
touch-screen	触摸屏
maximum takeoff weight	最大起飞重量

Notes

1. The latest members of the Boeing 737 family, the 737-600/-700/-800/-900 models ranging from 110 to 220 seats in mixed-class configuration, continue the 737's preeminence as the world's most popular and reliable commercial jet transport. 波音 737 家族的最新成员——新一代波音 737-600/-700/-800/-900 系列飞机, 继续秉承 737 系列飞机的杰出特性, 为全球乘客提供最广泛、最可靠的航空运输服务, 混合舱布局时可载客 110~220 人。
2. Each blended winglet is 8 feet long, and 4 feet in width at the base, narrowing to approximately 2 feet at the tip. 每个小翼 8 英尺长, 根部 4 英尺宽, (向上) 逐渐变窄, 到翼尖大约只有 2 英尺宽。
3. All members of the new 737 family have the same wingspan. Winglets provide several benefits to airplane operators, such as saving on fuel, range extension, more payload carriage and reduced engine maintenance costs, etc. 所有新一代 737 飞机的翼展完全一样。小翼给航空公司带来了以下几点利益: 节约燃油、延长航程、更大的有效载荷和降低发动机维护成本等。
4. The advanced wing design provides an economical cruise speed of 0.78 Mach — compared to 0.74 Mach for earlier 737 models — with capability of 0.82 Mach. 先进的

翼型设计使经济巡航速度更快，达到了 0.78 马赫，而波音早期 737 的速度为 0.74 马赫，最大飞行速度可达 0.82 马赫。

注：ER = Extended Range 延程型。双发延程飞行是国际民航组织专门为保证双发民航飞机安全飞行而提出的一项特别要求。当双发飞机的一台发动机或主要系统发生故障时，要求飞机在剩余一台发动机工作的情况下，在规定时间内飞抵最近的备降机场。

5. The number of ceiling and wall panels is reduced, giving the entryway a smoother, cleaner look. All signs are located in assigned areas instead of being spread about the entryway. 天花板和舱壁面板数量减少，使舱门入口通道看起来更流畅、更整洁。所有标识灯不是分散安装在入口区域，而是安装在指定区域。
6. The curved ceiling panels offer up to 3 additional inches of headroom. 弧型天花板可增加多达 3 英寸的净空高度。
7. The combination of noise-dampening material against the airplane's interior skin and a new design for the sidewall air grill makes the cabin quieter for a more comfortable flight. The air grill design is also more secure. 飞机内壁减噪材料和全新设计的侧壁空气格栅使客舱变得更安静，使飞行变得更舒适。空气格栅的设计也更安全。
8. Optional, convertible seats make it possible to quickly change the passenger cabin to accommodate a variety of airline seat configuration requirements. The seat pitch also is easily changed and the seat rows can be added or removed as needed. 座位可以选择和转换使客舱布局可以快速改变成为可能，以满足不同航空公司座位布局要求。改变座椅间距也变得容易，座位排数可按需求增加或减少。
9. Airlines have the option to equip their airplanes with modern flat-panel video displays as part of the passenger entertainment system. 在机上旅客娱乐系统中，航空公司可以选装新式平板显示器。
10. A video monitor is positioned every two to three seat rows. 每隔两排或三排装有一个图像监视器。

注：every 在此句的意思是“每隔”。如，every third seat（每隔三个座位）；every two hours（每两个小时）。

11. Cabin crews will experience increased functionality at a modernized, touch-screen attendant panel. The panel accommodates all existing cabin controls and adds controls for the new cabin lighting. 在最新的乘务员触摸屏面板上，乘务员将会体验更多功能。它包括了目前所有的客舱控制开关，还新增客舱照明控制开关。

Exercises

I. Please answer the following questions.

1. What are the two basic characteristics of the B737NG?
2. What are the members of the B737NG?
3. What makes the B737NG more popular than the earlier 737 models?
4. What benefits does the winglet provide to airlines?
5. Why does the entryway of the cabin look spacious?
6. Why do the passengers feel they have more legroom in the new cabin than in the earlier 737 models?
7. What's maximum takeoff weight of B737-800?
8. How many passengers can the B737NG accommodate respectively?
9. How many exterior emergency lights are there for B737-800 and where are they?
10. How many overwing emergency exits are there for B737-800?

II. Please fill in the blanks with the words given. Change the form where necessary.

blend	monitor	convertible	divider	dominate	entryway
headroom	dampen	pitch	optional	handrail	grill

1. Heat is _____ into electricity.
2. He has authority, but he doesn't try to _____ others.
3. Attendance at the lecture is _____.
4. As we all known, oil and water do not _____.
5. Do stairways with four or more steps have a secure _____?
6. This small room is served as a(n) _____ into the living-room.
7. Nothing can _____ my spirit and darken my life.
8. There is not enough _____ for buses to go under this bridge.
9. The patient was connected to the _____.
10. This plane has a larger seat _____ so passengers can feel more comfortable.

III. Please translate the following sentences into English.

1. 新一代 737 飞机混合舱布局可运载 110 到 220 名旅客。
2. 新一代 737 飞机在中短程航线市场中占主导地位。
3. 小翼能帮助航空公司节约燃油和降低发动机维护成本。

4. 小翼结构使机翼面积增加了 25%，油箱容量增加了 30%。
5. 新一代 737 飞机最大飞行高度可达到 41 000 英尺。
6. 颠簸时乘务员或旅客可抓住头顶行李箱上的扶手避免受伤。
7. 737-700 的每台发动机可产生 26 400 磅的推力。
8. 在紧急撤离时，机身外面安装的应急灯可以为机翼附近提供照明，以便于旅客撤离。
9. 737-900 延程型飞机共有四个翼上紧急出口，每侧各两个。
10. 乘务员在客舱里打开翼上紧急出口时，把手柄往下、往里拉，出口将往外、往上自动打开。

IV. Please translate the following passage into Chinese.

The flight crew sets the master passenger cabin target temperature reference to between 65 and 85 degrees Fahrenheit on the flight deck. The flight attendants can use CSS (Cabin Service System) to adjust the zone target temperature with the limits of 65 and 85 degrees Fahrenheit. The cabin temperature controllers automatically compensate for the temperature changes as cabin air humidity and passenger activity change during cruise and descent. The zone target temperature displayed on the Cabin Temperature screen is automatically increased (about 1 degree per hour to a maximum of 4 degrees) during cruise so the flight attendants do not have to manually increase the target temperature. The zone target temperature is automatically decreased (about 2 degrees Celsius) slowly during descent until all automatic systems corrections are removed.

Part Two Airbus 320

Preface History of Airbus Commercial Aircraft

Airbus is jointly owned by EADS^① (80%) and BAE SYSTEMS^② (20%). A Shareholders' (股东) Committee (委员会) of seven members (five from EADS and two from BAE SYSTEMS) acts as a supervisory council (管理委员会), approving the budget (预算) and three-year investment plan, new programs and major investment.

The Shareholders' Committee is also responsible for appointing the members of the Airbus Executive Committee (空中客车执行委员会), who are nominated (提名) by the Airbus Chief Executive Officer. The Executive Committee comprises ten people, led by President and Chief Executive Officer Noël Forgeard. It includes members from each core business function and is responsible for managing all Airbus activities. This ensures a common Airbus strategy as well as single lines of reporting and accountability (有责任)

① EADS: European Aeronautic Defence and Space Company 欧洲宇航防务集团

② BAE SYSTEMS: formerly British Aerospace 英国航空和宇航局

within each business function.

Reinforcing this trans-national and cross-functional approach, the General Managers of the Airbus national entities (实体) in France, Germany, Spain and the U. K. have a dual mission, ensuring that all national obligations are met and that instructions issued by the central functions are properly implemented. Thus, the General Managers are responsible for all the human, industrial and financial resources of the national entities, compliance (依从、顺从) with national laws and regulations, as well as cross functional co-ordination within Airbus.

Airbus was established in 1970 as a European consortium (联盟) of French, German and later, Spanish and U. K companies, as it became clear that only by co-operating would European aircraft manufacturers be able to compete effectively with the U. S. giants. By overcoming national divides, sharing development costs, collaborating (合作) in the interests of a greater market share, and even agreeing a common set of measurements and a common language, Airbus changed the face of the business, and brought airlines, passengers and crews the benefits of real competition.

Airbus' first aircraft, the A300B, was launched at the 1969 Paris air show. It was the first wide body twinjet and could carry 226 passengers in a comfortable two-class layout. A stretched 250 seat version, the A300B2, requested by launch customer Air France, went into full scale production.

By 1974, the A300 had been certified on budget and ahead of schedule — a major first for European companies at the time. By the end of 1975, Airbus had 10% of the market and a total of 55 aircraft on order. The company then went through a dark period, during which it failed to secure any new orders. Finally, US airline Eastern Airlines decided to lease (租借) four A300B4s.

This was a turning point, and from then on, Airbus never looked back. Within two years, Airbus had 133 firm orders and market share had risen to 26% by value. By the end of 1979, Airbus had 256 orders from 32 customers and 81 aircraft in service with 14 operators.

In July 1978, Airbus launched the A310, a shortened version of the A300. The aircraft featured the first ever two-man cockpit equipped with six cathode ray tubes displays (阴极射线管显示器) replacing the older dials. The A300 and A310 are in service with more than 80 operators worldwide, operating with scheduled and charter airlines, freight carriers and in military/governmental service. Typical capacity for the A310 is 220 seats in a standard, two-class configuration, while the longer-fuselage A300-600 accommodates 266 passengers. Both aircraft also are popular as freighters.

The A320, launched in 1984, was the first all-new design in its category in 30 years.

Incorporating new technologies, the aircraft provided better operating efficiency, better performance and above all, greater passenger comfort thanks to a wider fuselage cross-section (横截面). It was the first commercial aircraft to feature “fly-by-wire” controls (电传操纵系统) and side sticks (侧杆). Fly-by-wire technology, which was subsequently applied to the A330, A340 and A380, provides all the benefits of commonality across the Airbus product line.

The decision to launch the A320 has been proved a wise one. In spite of the recession (不景气) of the mid 1980s, the aircraft anticipated market demand for a modern, cost-efficient (合算的) aircraft to replace older planes when the economy turned round. Today, it is one of Airbus’ best-selling aircraft, popular with passengers and carriers alike.

By 1987, it was clear to Airbus that the time was ripe (成熟的) to launch not one, but two larger aircraft in a single program. The market was ready for a twin engine, medium-haul aircraft as well as a long range, four engine, airliner.

When the four-engine A340 entered service in 1993, it was the first entirely new, long-haul aircraft to start commercial operations for more than 20 years. The twin-engine A330 which joined it a year later combined some of the lowest operating costs of any aircraft ever designed with maximum flexibility for a wide range of route structures. The two new airliners shared the same airframe, the same wing design and the same popular twin-aisle cross-section as the A300/A310, incorporating the proven fly-by-wire controls of the A320.

Two additional versions of the A340, the A340-500 and the A340-600, have been developed in close cooperation with airlines. The A340-600 achieved certification (合格证) in May 2002 and entered airline service in August while its sibling (同胞), the A340-500, achieved certification in December 2002.

As one of the most successful wide body jetliners in service today, Airbus’ reliable and cost-effective A330 is leading the way — a fact underscored (强调) by this “Right aircraft, right now” advertisement.

The A330-200 typically carries 253 passengers in a first/business/economy class layout, while the aircraft’s two-class configuration seats 293 passengers. The A330-300 is the largest member of the twin-engine A330 series, with a maximum takeoff weight of 275 metric tonnes. The A330/A340 Family, powered by two or four engines, is composed of six jetliner versions that share the same fuselage cross-section. The twin-engine A330 is optimized for highest revenue generation and the lowest operating costs from regional segments to extended range routes, while the four-engine A340 provides versatility on the most demanding long-range and ultra-long-range flights.

In December 2000, Airbus launched the 555-seat A380 program at the top end of the spectrum (系列, 范围). A380-800 had its inaugural (开始的) flight in 2005. This all-

new double-decker aircraft is the most advanced, spacious (宽敞的) and efficient airliner ever conceived (构思), and the solution to growing traffic between major hubs.

Bigger, lighter, stronger and more efficient, the Airbus A380 is the most advanced aircraft in the sky. With five airlines operating 39 A380s worldwide, it has already flown more than 8.5 million passengers in an unprecedented (空前的) level of comfort. Deeply attracted by this new-generation jetliner, many passengers now go out of their way to travel on Airbus' 21st century flagship (旗舰).

The Airbus A380 offers a flying experience no other aircraft in the sky can match: two full-length decks with more space for every passenger, an onboard noise level that's the lowest of any existing passenger aircraft, quiet enough to significantly reduce fatigue. Until December 2010, A 380 has got 234 orders in total and delivered 40.

With more than 550 firm orders from 34 customers, the A350 XWB is shaping the future of air travel — providing airlines with a family of new-generation aircraft that is best suited to the market requirements in terms of size, range, revenue (收入) generation (产生), passenger comfort and the environment. It is estimated to deliver its first aircraft in 2014.

Lesson 9 Aircraft General

The A320 has been designed since the 1960s and has been “Setting the Standard” in cabin comfort, technology and efficiency for more than ten years. A320 technological innovation brought better performance and reliability with reduced fuel burn and easier maintenance. And, with the widest cabin of any single-aisle aircraft, the A320 has a distinct advantage in attracting and keeping passengers.

Spacious, airy and appealing — that is the opinion of the passengers. The A320 is on the top list for comfort in the single-aisle airliner category.

Aircraft Specifications

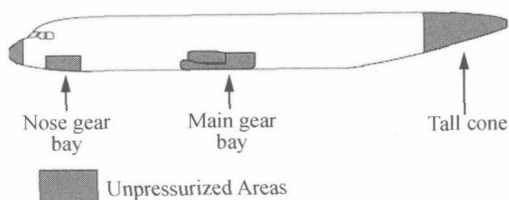
The A320 is a short-to-medium range, single aisle and subsonic transport aircraft powered by two turbofan engines. The length from the nose to the tail is 37.57 meters; the width between the two wings is 33.91 meters. On the ground the height from the top of the tail plane to the ground is 11.76 meters, and the doorsill height is 3.42 meters. Its maximum range is 3 000 nm/5 550 km and takeoff weight 73 500 kilograms. The designed maximum operating altitude is between minus 1 000 ft and 39 000 ft. The maximum design speeds are 0.82 (above 24 500 ft MMO) and 350 kts (below 24 500ft VMO).

The aircraft consists of three parts: the nose, the fuselage and the tail.

In the nose of the aircraft is the cockpit, which is the flight control center. The flight deck is designed to provide the maximum comfort and facilities to the crew. It includes various items of equipment and stowage facilities. The cockpit is provided with heat and sound insulation. It can accommodate two pilots, a third and fourth occupant (normally observers). The two pilots' seats are column mounted. The third and the fourth occupant seats are forward facing folding seats attached to the rear wall on either side of the cockpit door. And there is a safety locker in the cockpit and a mirror is installed on the forward side of the cockpit.

The fuselage has a circular cross section and is entirely pressurized with the exception of the nose and tail cones, the landing gear bays and air conditioning compartments. It is divided into two parts: the upper deck, which is the cabin area, and the lower deck, which is the cargo compartment. The cabin area, if it is two-class cabin layout, consists of two

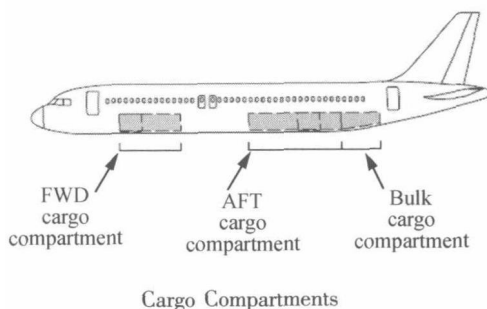
sections: the Business class and the Economy class. The Business class can accommodate 8 passengers while the Economy class can seat 150 passengers. The passenger-seating layout



may be varied to suit operating requirements up to a certified maximum of 179 passenger seats. The temperature of each of the two sections is controlled from the cockpit and the temperature range is from 18°C (64 °F) to 30°C (86 °F). The

conditioned air flows into the cabin through the PSU (Passenger Service Unit), which is located behind the overhead bin. For comfort passengers can use the PSU to adjust the rate and direction of the airflow.

There are three cargo compartments in the lower deck. The FWD and AFT cargo compartments are designed to carry containers, and the maximum load capacity is 3 402 kilograms. The bulk cargo compartment (aft the AFT cargo compartment) is designed for bulk loading and transportation of live animals, and has a load capacity of 1 497 kilograms. The three cargo compartment doors are located on the right side of the fuselage below the cabin floor. The FWD and AFT cargo doors open outward and upward, and can only be opened from the outside.



The fuel is carried in three tanks: LH wing tank, RH wing tank and the Center tank. The landing gears are of retractable and tricycle type. The two main gears are located under the wings and retract sideways towards the fuselage centerline and the nose gear retracts forward into the fuselage.

The tail cone consists of the rudder, the elevator, the stabilizer and the APU. The rudder and the stabilizer can be mechanically controlled.

Cabin Layout

There are three lavatories and two galleys in the cabin. The forward galley provides food and drinks for the Business cabin and the aft galley for the Economy class.

Generally there are six cabin attendant seats onboard which are located near each entry door and the aft right service door. They all face the tail of the aircraft. One attendant seat is installed in the center aisle and faces the cabin when in unfolded position.

The overhead stowage compartments, stressed 76 kg each, are provided along the

cabin sidewalls throughout the entire cabin. They can carry garment bags and other items with ease. The Passenger Service Units (PSU) and the Passenger Information Unit (PIU) are installed above the passenger seats. The PSU includes an attendant call pushbutton, passenger reading light pushbutton and a seat row identifier. The PIU incorporates a loudspeaker and a pictograph for NO SMOKING and FASTEN SEAT BELT signs.

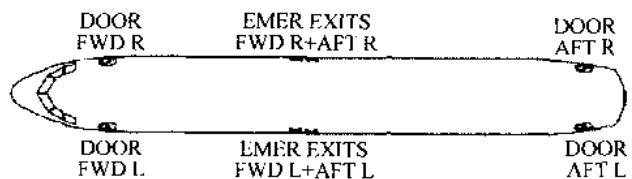
There are four stretcher areas on the A320. They are on the rear second, third and fourth rows. You can fold down the backs of these three rows and put the stretcher on top. The stretcher can only go through the Door L2.

Most of the passenger seats can be reclined backwards or forwards. However, the last row in the Economy Class can't be reclined because there is a wall panel behind it. The last row in the Business Class cannot be fully reclined because it is too near to the panel. In order to get access to the overwing exits in an emergency, the three rows near the overwing exits has limited movement. The backs of the forward two rows are fixed and the backs of the third row can only be reclined but not be fully down. Some passengers may find these seats a little uncomfortable. The seats beside the aisle can be used for the disabled passengers.

All the seats in the Economy Class, except the first row, have a table in the back of the seats. The table can be folded down and used by the passengers behind. However, in the Business Class and in the first row of the Economy Class, the tables are folded into the armrests of the seats. The PCU is on the armrest of the seats. Passengers can use it to select music channel and control the volume if the in-flight entertainment is installed onboard.

Exits

The A320 is equipped with ten exits: two cockpit window exits (sliding windows), four passenger/crew doors (two on each side) and four cabin emergency exits (two on each side). The passenger/crew doors are type "A" exits. The left two doors (L1 and L2) are normally used for passengers/crew embarking and disembarking and the right two doors (R1 and R2) are used for catering and cleaning. The cabin emergency exits are type "III" exits and used only during emergency. Both types of exits can be operated from inside or outside the aircraft. Each exit has a slide except the window exits in the cockpit. In an emergency all the exits can be used for emergency exits. In a ditching the slides, apart from the overwing exits, can also be



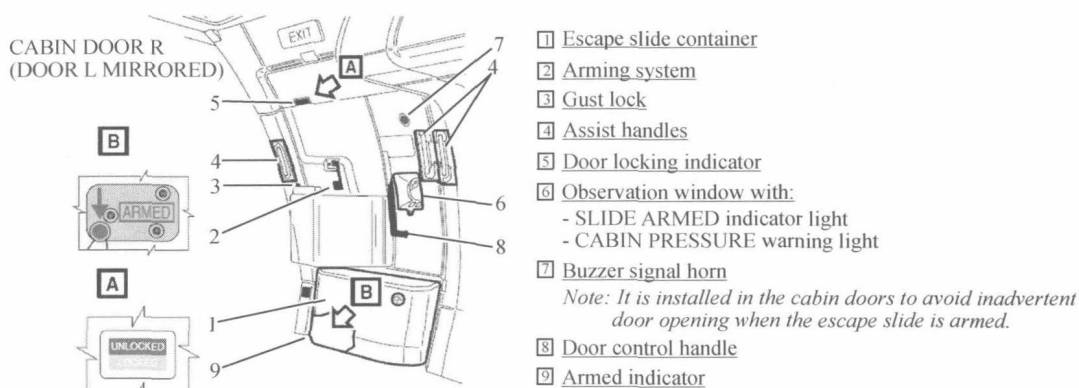
Locations of Doors/Exits

used as life rafts.

The cockpit has two sliding windows located on each side. They can be opened from the inside only and used mainly for flight crew evacuation in case of emergency.

The overwing exits are different from other exits. The overwing exits are smaller than other exits. They are always armed. Once they are opened from inside, the slide will be inflated automatically. But when they are opened from outside, they will be disarmed automatically and the slide will not be inflated.

Each cabin door has an observation window equipped with a sunshade. There are two electrical indicators close to the window: Slide Armed indicator and "Cabin Pressure" warning indicator. These indicators can be observed either from inside or outside through the observation window.



Controls and Indicators of the Cabin Door

Before opening the door, cabin crew should look outside through the observation window first to see if it is safe for the passengers to disembark, then check with the "armed" lever and signs near the floor in the "disarmed" position. They must also ensure that the safety pin is installed, and the cabin pressure warning indicator doesn't flash red. The "Cabin Pressure" warning indicator will flash red in case of cabin differential pressure above 2.5 millibars (MBAR) when all the engines are shut down and the related door is disarmed. If it flashes, cabin crew must not force the handle to open the door but be required to report to the captain immediately. If a cabin crewmember opens the door while the red "Cabin Pressure" warning indicator light is flashing, there is a risk that the cabin door will open violently because the cabin is not fully depressurized. When everything is OK, the door can be opened. Lift the door control handle fully up. The two upper latches disengage and the cabin door unlocks. Make sure the "Slide Armed" light does not

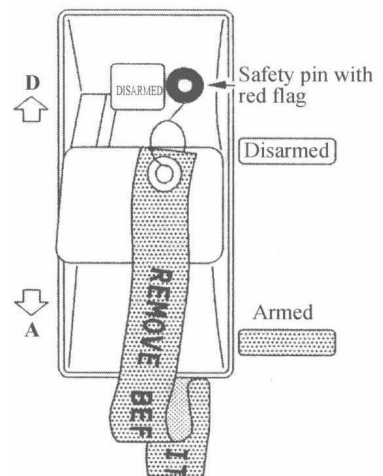
illuminate white. If the Slide Armed indicator light is ON, and the slide arming lever is in the armed position, the slide will be activated automatically by opening the door. Then the cabin crew can push the door outwards, move it forwards and sideways by grasping the auxiliary handle until it is locked in its fully open position. An integrated damper limits the speed of the door.

To unlock the door from its fully open position, the cabin attendant must press the gust lock located on the support arm of the door, and at the same time pull the support arm towards themselves, then grasp the auxiliary handle to move the door rearwards. When the door is in front of its frame, she can pull the door in and lower the door control handle, and then check the door locks correctly. The door locking indicator on the upper part of the door indicates the status of the door. When the door is not in its closed/locked position, the information UNLOCKED is displayed on a red background in the DOOR LOCKING indicator. When the door is closed and locked, the information LOCKED is displayed on a green background in the DOOR LOCKING indicator.

Each cabin door is equipped with a damper and emergency operation cylinder which is located behind the support arm. It limits the door travel during normal operation of the door, esp. in windy conditions. During emergency operation, it acts as an actuator for automatic door opening. The damper and emergency operation cylinder is operated by compressed nitrogen which is stored in a cylinder equipped with a pressure gauge.

Before emergency opening, cabin crew must check the outside conditions through the observation window and make sure that the slide deployment area is clear of fire, smoke and obstacles. They must also ensure that the slide arming system is in Armed mode, then hold on to the frame assist handle and lift the door control handle fully up and release it. The door opens automatically and locks in the open position. If the pneumatic assistance of the door fails, the cabin crew should push the door open manually.

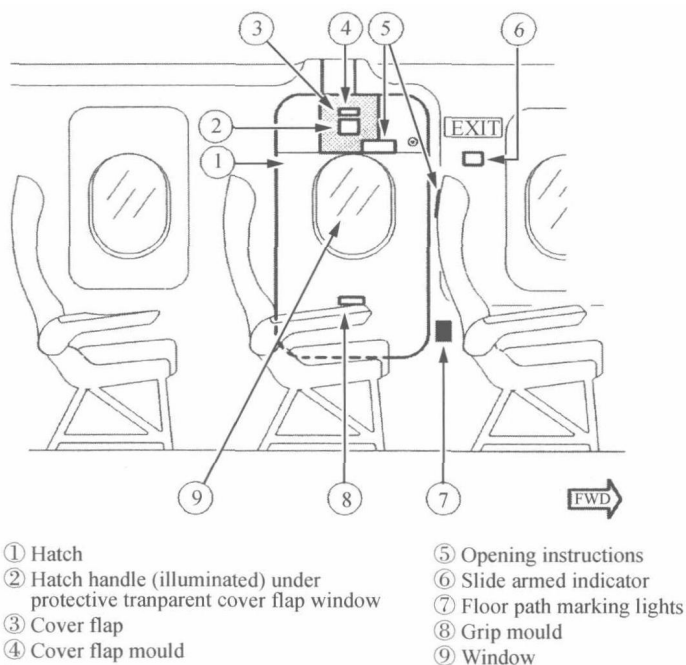
Arming and disarming the door ensures that the doors operate correctly when they are opened either upon normal landing or during an emergency. When the arming lever is in the Disarmed position, the arming system lever connects the girt bar, to which the escape slide is attached, to the cabin doors; when the arming lever is in the Armed position, the arming system lever connects the girt bar to the cabin floor. When the armed lever is in the Disarmed position, a safety pin with a red flag must be installed to indicate



Disarmed Position

the door is in Disarmed mode and prevents inadvertent movement of the arming lever.

To arm the door, the safety pin has to be removed and stowed in the hole on the support arm of the door, then the arming lever must be moved down to the Armed position. The door is now armed and ready for flight. If the door is opened from outside and the armed lever is in the Armed position, the lever will move automatically and mechanically to the Disarmed position. The disarmed procedure is opposite to the armed procedure. First the cabin crew must move the arm lever to the Disarmed position, then take out the safety pin from the stowage hole and insert it into the hole in order to indicate that the slide is Disarmed and prevent inadvertent movement of the slide arming lever.



Controls and Indicators of the Emergency Exit

There are four overwing exits altogether, two on each side of the fuselage. They are only used in emergency and they are always in “Armed” mode. If passengers will have to evacuate during an emergency from the overwing exits, they can remove the handle cover, and the “Handle Light” and “Slide Armed” indicator illuminate. Then, they pull down the control handle and the emergency exit moves inwards, lift the emergency exit from the frame by holding the grip mould. Finally they can either put the emergency exit on the passenger seats or throw it outside the cabin. Now passengers can evacuate from the overwing exits.

There are six slides on the aircraft, but the slides on the overwing exits cannot be used as life rafts, so there are only four slide/rafts onboard.

New Words

standard [ˈstændəd]	<i>n.</i> 标准, 规格
innovation [ˌɪnəʊ'veɪʃən]	<i>n.</i> 改革, 创新
distinct [dɪs'tɪŋkt]	<i>adj.</i> 清楚的, 明显的, 截然不同的
spacious [ˈspeɪʃəs]	<i>adj.</i> 宽阔的, 宽敞的
airy [ˈeəri]	<i>adj.</i> 空气的, 空中的, 通风的
appealing [ə'pi:liŋ]	<i>adj.</i> 吸引人的
specification [ˌspesɪfɪ'keɪʃən]	<i>n.</i> 详述, 规格
subsonic [ˈsʌb'sɒnɪk]	<i>adj.</i> [物] 亚音速的
category [ˈkætɪgəri]	<i>n.</i> 种类, 类别
turbofan [ˈtɜ:bəʊ,fæn]	<i>n.</i> 扇涡轮
minus [ˈmaɪnəs]	<i>adj.</i> 负的, 减的
facility [fə'sɪlɪti]	<i>n.</i> 设备, 工具
insulation [ˌɪnsju'leɪʃən]	<i>n.</i> 绝缘
suit [su:t]	<i>v.</i> 适合, 适宜于
certified [ˈsə:tɪfaɪd]	<i>adj.</i> 证明合格的, 有保证的
adjust [ə'dʒʌst]	<i>vt.</i> 调整, 调节
airflow [ˈeə,fləʊ]	<i>n.</i> 气流
container [kən'teɪnə]	<i>n.</i> 集装箱
transportation [ˌtræns'pɔ:t'eɪʃən]	<i>n.</i> 运输, 运送
mechanically [mi'kænikəli]	<i>adv.</i> 机械地
garment [ˈgɑ:mənt]	<i>n.</i> 衣服, 外衣
ease [i:z]	<i>n.</i> 没有困难、艰辛或费力
identifier [aɪ'dentɪfaɪə]	<i>n.</i> 标识符, 识别码
pictograph [ˈpɪktəgrɑ:f]	<i>n.</i> 象形图
stretcher [ˈstretʃə]	<i>n.</i> 担架
rear [rɪə]	<i>adj.</i> 后面的, 背面的, 后方的
fold [fəʊld]	<i>vt.</i> 折叠
catering [ˈkeɪtərɪŋ]	<i>n.</i> 配餐
sunshade [ˈsʌnʃeɪd]	<i>n.</i> 遮阳板
millibar [ˈmɪlɪbɑ:]	<i>n.</i> 毫巴
integrated [ˈɪntɪɡreɪtɪd]	<i>adj.</i> 综合的, 完整的
dampener [ˈdæmpə]	<i>n.</i> 缓冲器, 减震器
status [ˈsteɪtəs]	<i>n.</i> 情形, 状况

background [ˈbækgraʊnd]	<i>n.</i> 背景, 底色
actuator [ˈæktʃueɪtə]	<i>n.</i> 制动器, 传动装置
nitrogen [ˈnaɪtrədʒən]	<i>n.</i> [化] 氮
pneumatic [nju(:)'mætik]	<i>adj.</i> 装满(压缩)空气的
inadvertent [ˌɪnəd'vɜ:tənt]	<i>adj.</i> 不注意的, 疏忽的
grip [ɡrɪp]	<i>n.</i> 把手
mould [məʊld]	<i>n.</i> [亦作 mold] 模具

Technical Terms

single-aisle	单通道
turbofan engine	涡扇发动机
MMO (Maximum Mach Operating Speed)	最大飞行马赫数
VMO (Maximum Operating Speed)	最大飞行速度
folding seat	折叠座椅
safety locker	安全锁
cross section	横截面
landing gear bays	起落架舱
air conditioning compartment	空调舱
bulk cargo compartment	散货舱
tricycle landing gear	三轮式起落架
electrical indicator	电子指示灯
differential pressure	压差
gust lock	镇风锁
support arm	支撑臂
safety pin	安全插销
stowage hole	储藏孔
door locking indicator	门锁指示器
grip mould	把手盒

Notes

1. The two pilots' seats are column mounted. The third and the fourth occupant seats are forward facing folding seats attached to the rear wall on either side of the cockpit door.
两个飞行员座椅为柱式。第三、四个乘机者的折叠式座椅面向机头方向、附在驾

驶舱门旁的后舱壁上。

注：驾驶舱里除机长和副驾驶座位外，其他均为观察员座位。

2. The fuel is carried in three tanks: LH wing tank, RH wing tank and the Center tank. The landing gears are of retractable and tricycle type. The two main gears are located under the wings and retract sideways towards the fuselage centerline and the nose gear retracts forward into the fuselage. 飞机共有三个油箱：左翼油箱、右翼油箱和中央油箱。起落架为三轮式，可收回。主起落架位于机翼下方，从两侧向机身中心线收起，前起落架往前收回到机身。
3. In order to get access to the overwing exits in an emergency, the three rows near the overwing exits has limited movement. The backs of the forward two rows are fixed and the backs of the third row can only be reclined but not be fully down. 为了能在紧急情况下从翼上出口撤离，靠近翼上出口的三排座位移动受限。前两排座椅靠背是固定的，第三排的座椅靠背可以往后放但不能完全放下。
4. The passenger/crew doors are type “A” exits. The left two doors (L1 and L2) are normally used for passengers/crew embarking and disembarking and the right two doors (R1 and R2) are used for catering and cleaning. The cabin emergency exits are type “III” exits and used only during emergency. 旅客/机组舱门是A型出口。左边的两个门（左一门和左二门）常用于旅客/机组上下飞机，右边的两个门（右一门和右二门）用于配餐和清洁。客舱紧急出口为“III”型出口，仅在紧急情况下使用。

注：一般来说，A型门通常指地板高度出口，“III”型指紧急出口。紧急出口比地板高度出口更小、更窄。

5. When the door is not in its closed/locked position, the information UNLOCKED is displayed on a red background in the DOOR LOCKING indicator. When the door is closed and locked, the information LOCKED is displayed on a green background in the DOOR LOCKING indicator. 当舱门没有关闭/锁好时，门锁指示器显示红色“未锁好”信息。当舱门关闭、锁好后，门锁指示器显示绿色“锁好”信息。
6. Each cabin door is equipped with a damper and emergency operation cylinder which is located behind the support arm. 每个舱门都装有一个减震应急作动筒，它位于支撑臂的后面。

注：a damper and emergency operation cylinder 不能翻译为“一个减震器和应急作动筒”，emergency operation cylinder 前面没有不定冠词。名词前分别有冠词表示不同的人或事，如果只有一个冠词则表示一人或一物，如 a black and white cat 译成“一只花猫”，a black and a white cat 的意思是“一只黑猫和白猫”。

7. The damper and emergency operation cylinder is operated by compressed nitrogen which is stored in a cylinder equipped with a pressure gauge. 减震应急作动筒通过压缩氮气

工作，压缩氮气储存在一个作动筒里，上面装有压力表。

8. When the arming lever is in the Disarmed position, the arming system lever connects the girt bar, to which the escape slide is attached, to the cabin doors; when the arming lever is in the Armed position, the arming system lever connects the girt bar to the cabin floor. 当予位手柄在“解除予位”位置时，与撤离滑梯连在一起的连接杆通过予位系统手柄和舱门相连；当予位手柄在“予位”位置时，连接杆通过予位系统手柄和客舱地板连接。
9. If passengers will have to evacuate during an emergency from the overwing exits, they can remove the handle cover, and the “Handle Light” and “Slide Armed” indicator illuminate. 紧急情况下如果旅客必须从翼上出口撤离，取下手柄盖，“手柄灯”和“滑梯予位”指示灯亮。

Exercises

I. Please answer the following questions.

1. What kind of aircraft is the A320?
2. What's the height from the door's threshold to the ground?
3. How many passengers can the A320 hold in mixed class configuration?
4. Who controls the cabin temperature?
5. How many exits are there on the A320? What are they?
6. What procedures must cabin crew keep in mind before opening the cabin door?
7. What are the procedures when closing the cabin doors?
8. What is the function of the “cabin pressure” indicator?
9. What are the differences between the overwing exits and the cabin doors?
10. How many slide/rafts are there onboard? Where are they?

II. Please fill in the blanks with the words given. Change the form where necessary.

reliability	distinct	appealing	specification	certified	attend
stretcher	inadvertent	sunshade	actuator	circular	pictograph

1. Can you give me a price list with _____?
2. Those two ideas are quite _____ from each other.
3. With a(n) _____ gesture she swept the book off the table onto the floor.
4. The idea of a holiday abroad is surely _____.
5. She didn't _____ to what I was saying.

6. Stop giving me _____ explanations and tell me what really happened.
7. I can assure you of the _____ of the equipment.
8. I have been a _____ doctor since 2001.
9. May I trouble you to put down the _____?
10. We carried the wounded man on a _____.

III. Please translate the following sentences into English.

1. 空客 320 是中短程、亚音速飞机，可以由两台涡轮发动机提供动力。
2. 客舱温度调节可分为两个区域，可以由驾驶舱人工控制。
3. 旅客服务组件包括乘务员呼唤按钮、阅读灯开关和座位排数标识。
4. 空客 320 的担架区域位于客舱最后倒数第二、三、四排，只能通过左二门进入客舱。
5. 公务舱和经济舱第一排的小桌板放在座椅的扶手里。
6. 每个客舱门的观察窗都装有遮光板。
7. 如果客舱压力红色警示灯闪亮，乘务员必须马上报告驾驶舱。
8. 当客舱门锁好后，门锁指示器会显示绿色的“门已锁好”。
9. 当从机外打开舱门时，滑梯会自动解除预位。
10. 翼上出口的滑梯不能用作救生筏，所以空客 320 只有四个滑梯/救生筏。

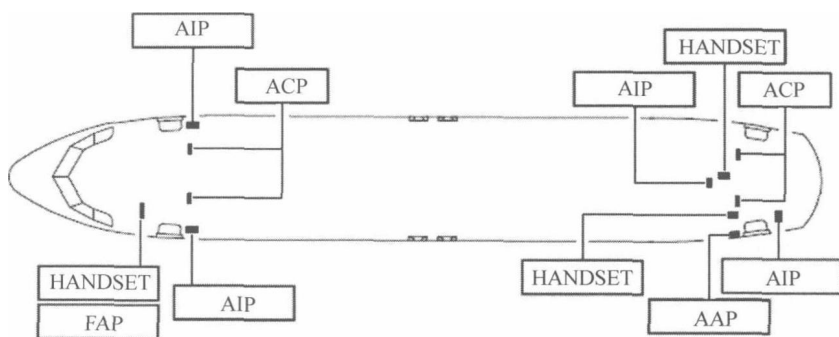
IV. Please translate the following passage into Chinese.

To arm the door, the safety pin has to be removed and stowed in the hole on the support arm of the door, then the arming lever must be moved down to the Armed position. The door is now armed and now ready for flight. If the door is opened from outside and the armed lever is in the Armed position, the lever will move automatically and mechanically to the Disarmed position. The disarmed procedure is opposite to the armed procedure. First the cabin crew must move the arm lever to the Disarmed position, then take out the safety pin from the stowage hole and insert it into the hole in order to indicate that the slide is Disarmed and prevent inadvertent movement of the slide arming lever.

Lesson 10 Cabin Systems (I)

The CIDS

The CIDS (the Cabin Intercommunication Data System) is used to do functional control, testing and monitoring of the cabin systems. It integrates most of the cabin systems for communications, calls and indications. The CIDS consists of six parts: the Forward Attendant Panel (FAP), the Aft Attendant Panel (AAP), the Attendant Indication Panel (AIP), the Area Call Panel (ACP), the Programming and Testing Panel (PTP) and the attendant handset. The CIDS provides the possibility of changing the cabin layout and configuration without changing existing equipment. The configuration data is stored in the Cabin Assignment Module (CAM) stored in the FAP. It contains many system properties and cabin layout information.



Component Location

The FAP is located above the forward left hand attendant position and provides controls for all the systems installed in the cabin. The AAP is located by the L2 cabin door and provides additional control for some of the cabin systems, mainly for the aft cabin. The AIP is located near each attendant's station to display communication information and cabin system information. The ACP is installed in the cabin ceiling near the attendant's station. It is used to display calling information to warn the cabin attendants. The PTP is mounted above the forward cabin attendants' seats and is covered with a panel. It is close to the

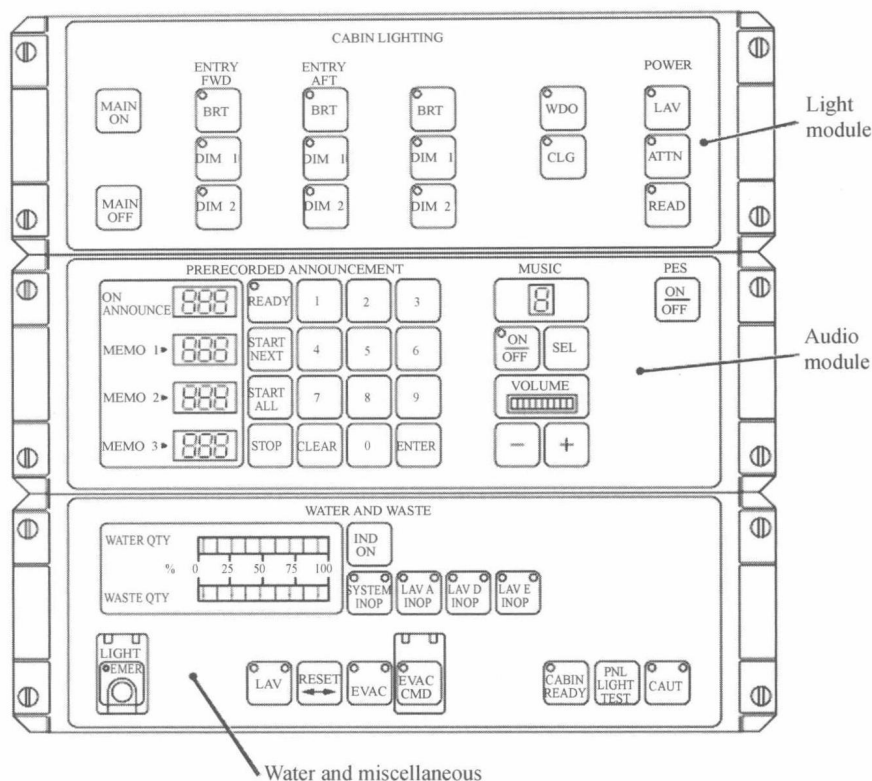
FAP. The PTP is mainly used for testing the cabin systems and provides information for service crew. Three attendant handsets are provided at forward and aft attendant stations. They are used for interphone communications.

FAP

The FAP is the main panel for the cabin control. It provides control and display for most systems in the cabin. The panel consists of four parts; the lighting module, the audio module, the water and waste module, and the miscellaneous module. The lighting module consists of the cabin lighting module, the lavatory lighting module, the cabin attendant work lighting module and the passenger reading light module. The details of the lighting module will be learned in detail in the lighting system. The audio module on the FAP is mainly used to play the boarding music and control the music channel by the earphones on the passenger seats. Only after the "ON/OFF" button on the audio panel is turned on can the cabin attendant modulate the channel and volume for the boarding music. Apart from the boarding music, passengers can also modulate the volume of their earphones and select channels by the buttons installed in the arms of the passenger seats.

There is a fresh water container and a waste water container located in the cargo compartment. They are both 200 liters. The water and waste system indicator is mainly used to indicate the level of the water and waste in the two containers. It can also indicate the working situation in the lavatories. The water and waste quantities are not displayed until the "Indicator On" button is pressed. There are four abnormal indicator lights for vacuum toilet systems indicating the states; the cabin vacuum system and three lavatories. The four indicator lights do not flash in the normal situation, but the vacuum system of the lavatory must be closed if one of the lights flashes. It indicates the vacuum system of that lavatory has failed.

The miscellaneous module is located at the bottom of the FAP. It is mainly used for an emergency situation. There is a plastic safety cover over the emergency light. The cover must be lifted before turning on the switch. Once pressed, the emergency lights on the ceiling, the exit lights, the exit signs and the floor escape path lighting all illuminate in the cabin. There is a smoke indicator light in the miscellaneous module. Suppose the lavatory is on fire, and the smoke detector in the lavatory has now detected the smoke. The alarm sounds in the cabin. The amber light in the ACP flashes and pink lights on the AIP illuminate. After the fire has been extinguished by the crew, the alarm amber indicator does not turn off automatically, and the "RESET" button need to be pressed to reset the alarm. The "LAV" light on the FAP will turn off after the smoke disappears. The alarm is stopped and the system is reset.



FAP-Overview

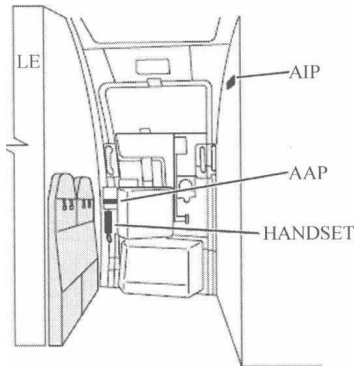
There is a button for emergency evacuation in the panel: CMD. Once the “CMD” button is pressed, the “EVAC” lights on the FAP and AAP turn red, evacuation chime sounds in the cabin, the “EVAC” light in the cockpit flashes. These show the signal of beginning of the emergency evacuation. In the same way as the smoke alarm, pressing the “RESET” button beside EVAC can reset the whole system.

The panel light test button at the right side is used to test the indicator lights on the FAP. Press and maintain the panel light test pushbutton, the indicator lights on the FAP will come on; release the pushbutton, all the lights extinguish. If the FAP or CIDS connected system fails to operate, the alarm light “CAUT” at the right bottom of this module comes on, indicating that the help of the service crew is needed.

There are three kinds of buttons on the FAP. The first kind of button has a green light on it, which has two states: bright and dim. It is bright when the light is turned on and dim when the light is turned off. The second kind of button has two red lights that have two states: bright and dim. It is bright when the light is turned on and dim when the light is

turned off. The third kind has no light on it. There are two ways to operate it. For example, the “MAIN ON” and “MAIN OFF” buttons on the lighting module only need be pressed once. They stay the same even they are pressed a number of times. The other is to press and hold the button. This sort of button is often used for testing purposes, such as the indicator “ON” button, the lighting panel “TESTING” button on the FAP.

AAP

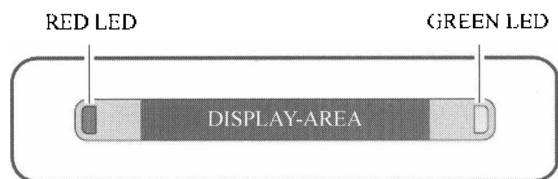


Aft Attendant Panel

The Aft Attendant Panel provides additional control for some of the cabin systems. It can modulate the light of the aft entrance lighting and send out the evacuation alarm and can also be reset. It works in the same way as the FAP. There is also an evacuation light on the AAP. After the evacuation signal has started, its red light can flash. Similarly the “RESET” button can reset the evacuation alarm and smoke detectors. All buttons and indicators on the AAP are contained on the FAP.

AIP

Attendant Indication Panels on the A320 are installed close to the attendant stations so that the cabin attendants can easily see the information. The AIPs display the communication information and cabin system information. It is divided into two parts: alphabet-numeric display and indicator lights. The alphabet-numeric liquid crystal display with two rows each of 16 characters; the upper row displays communication information such as interphone calls. The lower row displays the cabin system information such as passenger address. There are two indicator lights at both sides of the display to serve as attention getters. The red one is for system and emergency information, and the green one is for normal communication information.



AIP

ACP

There are two Area Call Panels installed in the forward and aft cabin ceiling. They can show the calling information. There are four indicator lights on the ACP; one amber, two pinks and one blue. The amber indicator light illuminates steadily when the call is from the

lavatory, and it flashes whenever smoke is detected in the lavatory. There are two pink indicator lights in the middle of the panel. The two pink lights show a steady illumination whenever any call comes from the cockpit or from other attendant's station, but flash simultaneously whenever an emergency call is initiated from the cockpit or from other attendant's station. The blue light where the call was initiated will come on with a steady illumination when the call comes from the passenger in the cabin.

PTP

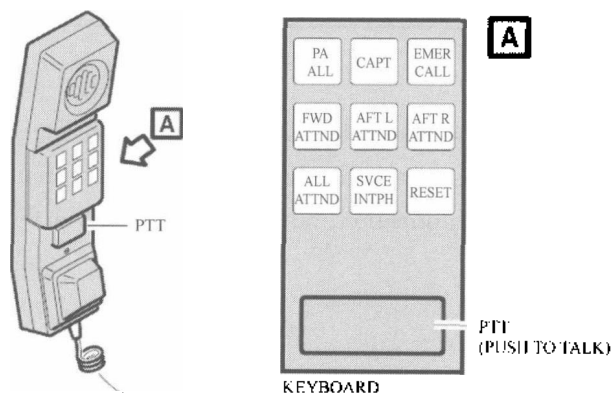
The Programming and Testing Panel is mounted above the forward cabin attendant seats behind an access cover, close to the FAP. The PTP comprises the following features; an alphanumeric display with four rows each with twenty characters, a standard keypad and eight soft keys, pushbuttons (P/Bs) with indicator lights for test purpose and a cabin assignment module for software update. The PTP is used for testing cabin systems. After power up of the PTP, a menu displays following options: SYSTEM STATUS, SYSTEM TEST and PROGRAMMING. The system status mode allows the attendants to display status of cabin systems such as slides pressure or doors pressure. In case of failure of any CIDS connected system, the system status menu is automatically displayed on the PTP with faulty systems. At the same time the CIDS CAUT P/B light illuminates red to indicate that a CIDS failure occurred. It's possible to reset the CIDS through the PTP when the aircraft is on the ground by using the RESET function of SYSTEM TEST mode.

Attendant Handset

An attendant handset with integral pushbuttons for passenger address and interphone calls is provided at attendant stations. It consists of an earphone, an integral keypad, a

Push-To-Talk (PTT) switch and a microphone. Most of the time cabin attendants will use the handset for interphone communication and passenger addressing. The buttons on the integral keypad can be grouped into five parts;

1. The PA buttons. It includes PA ALL, PA FWD and PA AFT. These buttons are used to make announcements to passengers.



Cabin Handset with Keyboard

2. The interphone buttons. It contains CAPT, FWD ATTND, AFT L ATTND, AFT R ATTND and ALL ATTND. The interphone buttons are used to make a call to the cockpit or other attendants in the forward and aft cabin.

3. The interphone maintenance button. The SVCE INTPH button is only used when the aircraft is on the ground.

4. The urgent call. The EMER CALL button is only used in emergency situation.

5. The RESET button. After making the call, cabin crew can press it to reset the system.

New Words

integrate [ˈɪntɪɡreɪt]	<i>vt.</i> 使成整体, 使一体化, 结合
indication [ˌɪndɪˈkeɪʃən]	<i>n.</i> 指示, 迹象, 暗示; 信号
existing [ɪɡˈzɪstɪŋ]	<i>adj.</i> 现有的
data [ˈdeɪtə]	<i>n.</i> datum 的复数, [计] 资料, 数据
assignment [əˈsainmənt]	<i>n.</i> 分配, 委派, 任务
property [ˈprɒpəti]	<i>n.</i> 特性
additional [əˈdɪʃənəl]	<i>adj.</i> 另外的, 附加的, 额外的
modulate [ˈmɒdjuleɪt]	<i>vt.</i> 调整, 调节
alphabet [ˈælfəbet]	<i>n.</i> 字母表
numeric [njuːˈmerɪk]	<i>adj.</i> 数字的
keypad [ˈkiːpæd]	<i>n.</i> [计] 键区
integral [ˈɪntɪɡrəl]	<i>adj.</i> 完整的, 整体的
simultaneously [sɪməˈteɪniəsli; (US) saɪm-]	<i>adv.</i> 同时地
initiate [ɪˈniʃieɪt]	<i>vt.</i> 开始, 发动
comprise [kəmˈpraɪz]	<i>v.</i> 包含, 由...组成
feature [ˈfi:tʃə]	<i>n.</i> 特征, 特点, 特色
alphanumeric [ˌælfənjuːˈmerɪk]	<i>adj.</i> 字母数字的
character [ˈkærɪktə]	<i>n.</i> 字符 (字母或数字)
menu [ˈmenjuː]	<i>n.</i> 菜单
faulty [ˈfɔːlti]	<i>adj.</i> 有故障的

Technical Terms

CIDS (Cabin Intercommunication Data System)

客舱内部通讯数据系统

FAP (Forward Attendant Panel)	前乘务员面板
AAP (Aft Attendant Panel)	后乘务员面板
AIP (Attendant Indication Panel)	乘务员指示面板
ACP (Area Call Panel)	区域呼叫面板
PTP (Programming and Testing Panel)	编程和测试面板
floor escape path lighting	地板撤离通道灯
LAV (Lavatory)	卫生间
CMD (Command)	指令, 命令
EVAC (Evacuation)	撤离
SVCE INTPH (Service Interphone)	勤务内话
EMER (Emergency)	紧急
PES (Passenger Entertainment System)	旅客娱乐系统
fresh water container	净水箱
waste water container	污水箱
safety cover	保险盖

Notes

1. The CIDS provides the possibility of changing the cabin layout and configuration without changing existing equipment. The configuration data is stored in the Cabin Assignment Module (CAM) stored in the FAP. It contains many system properties and cabin layout information. 改变客舱布局而保留原有设施, 客舱内部通讯数据系统使其成为可能。客舱布局信息储存在前乘务员面板里的客舱布局组件 (CAM), 它包含了很多系统特性和客舱布局信息。

注: 空客 320 飞机的客舱布局组件通过软件来修改客舱相关信息。

2. Only after the “ON/OFF” button on the audio panel is turned on can the cabin attendant modulate the channel and volume for the boarding music. 只有当音频面板上的 “ON/OFF” 按钮接通时, 乘务员才能调节登机音乐的频道和音量。

注: 副词 only 置于句首, 强调方式状语、条件状语、地点状语、时间状语等状语时, 主句要进行部分倒装, 状语从句不倒装。如果放于句首的 only 所修饰的不是状语时, 该句不用倒装。

例: Only when we had studied the data again did we realize that there was a mistake.

Only John can save me.

3. Suppose the lavatory is on fire, and the smoke detector in the lavatory has now detected

the smoke. The alarm sounds in the cabin. 如果卫生间失火，卫生间烟雾探测器检测到有烟，客舱里的警告喇叭会发出警告。

注：suppose 在此句中用于引导条件状语从句，相当于连词 if，有时还可用于虚拟语气。例：Suppose he doesn't agree, what shall we do?

4. It is divided into two parts: alphabet-numeric display and indicator lights. The alphabet-numeric liquid crystal display with two rows each of 16 characters; the upper row displays communication information such as interphone calls. The lower row displays the cabin system information such as passenger address. 乘务员指示面板分为两部分：字母数字显示和指示灯。字母数字液晶显示分为两行，每行 16 个字符，上面一行显示通讯信息，比如内话呼叫，下面一行显示客舱系统信息，比如旅客广播。
5. The Programming and Testing Panel is mounted above the forward cabin attendant seats behind an access cover, close to the FAP. 编程和测试面板安装在前乘务员座椅上方的嵌板后面、前乘务员面板附近。
6. The PTP comprises the following features: an alphanumeric display with four rows each with twenty characters, a standard keypad and eight soft keys, pushbuttons (P/Bs) with indicator lights for test purpose and a cabin assignment module for software update. 编程和测试面板包含以下特点：4 行字母数字显示，每行 20 个字符；1 个标准键盘，8 个自定义功能键；用于测试的指示灯按钮和用于软件更新的客舱布局组件。
7. In case of failure of any CIDS connected system, the system status menu is automatically displayed on the PTP with faulty systems. At the same time the CIDS CAUT P/B light illuminates red to indicate that a CIDS failure occurred. 如果任意一个与客舱内部通讯数据系统相连的系统失效，系统状态菜单在编程和测试面板上会自动显示出有故障的系统。同时，客舱内部通讯数据系统 CAUT 按钮红灯亮，表示客舱内部通讯数据系统出现故障。

Exercises

I. Please answer the following questions.

1. What elements does CIDS consist of?
2. How many units are there in the FAP? What are they?
3. How does the cabin crew send the evacuation signal?
4. How is the evacuation system reset?
5. What are the functions of the AIPs?
6. What do the colors of the indicators on the AIP stand for?
7. Where are the ACP?

8. What kind of information do the indicator lights on the ACP display?
9. What's the function of the PTP?
10. When can the SVCE INTPH button be used?

II. Please fill in the blanks with the words given. Change the form where necessary.

existing	assignment	property	additional	module	modulate
integral	simultaneously	initiate	feature	option	audio

1. This case presents some interesting _____.
2. There was no telling what the next _____ would be.
3. The speaker had a really good voice which he could _____ with great skill.
4. The company _____ a management training program for small businesses.
5. Make a list of the various _____ so that we can choose what we like best.
6. In her speech, the Minister came out against any change to the _____ law.
7. You should know the _____ responsibilities that are incidental to the job.
8. Many plants have medicinal _____.
9. The galley is a(n) _____ part of an airplane.
10. You have to choose five _____ to learn in the first year.

III. Please translate the following sentences into English.

1. 客舱内部通讯数据系统用于客舱系统的功能控制、调试和监控。
2. 如果前乘务员面板或一个与客舱内部通讯数据系统相连的系统不能工作，其面板上的“小心”警告灯会亮。
3. 按下前乘务员面板上的面板灯测试按钮，可以检查其每个功能键的状况。
4. 后乘务员面板提供客舱内一些系统的辅助控制功能。
5. 乘务员可通过手机按钮来进行旅客广播和机组内部通话。
6. 乘务员指示面板上的红灯表示系统和紧急信息。
7. 驾驶舱紧急呼叫乘务员时，区域呼叫面板上的两个红色指示灯会闪亮。
8. 旅客在客舱里按下乘务员呼唤按钮后，离他最近的区域呼叫面板上的蓝色灯会稳定地亮。
9. 编程和测试面板上的系统状态模式能显示客舱系统状态，如滑梯压力。
10. 只有当飞机在地面时，乘务员才能使用勤务内话。

IV. Please translate the following passage into Chinese.

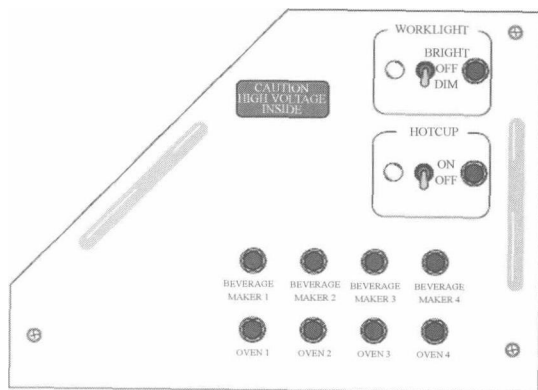
There are four indicator lights on the ACP: one amber, two pinks and one blue. The amber indicator light illuminates steadily when the call is from the lavatory, and it flashes

whenever smoke is detected in the lavatory. There are two pink indicator lights in the middle of the panel. The two pink lights show a steady illumination whenever any call comes from the cockpit or from other attendant's station, but flash simultaneously whenever an emergency call is initiated from the cockpit or from other attendant's station. The blue light where the call was initiated will come on with a steady illumination when the call comes from the passenger in the cabin.

Lesson 11 Cabin Systems (II)

Galleys

There are two galleys on the A320; the forward and the aft. The aft galley is bigger and has more equipment than the forward because it provides food and drinks for the passengers in the Economy Class. Ovens, coffee makers, water boilers and hot cups are the essential galley equipment. Some aircraft may be equipped with ice-containers. The dining carts are stowed in the lower part of the galley and must be secured whenever aircraft is moving on the ground, taking off, landing, or expecting turbulence in-flight. Two paddles under the cart control the cart's movement. Pressing the red paddle applies brake and stops the cart while pressing the green paddle release the brake.



Electrical Panel

There is an electrical control panel in the forward and aft galley. The power control panel provides power to the galley.

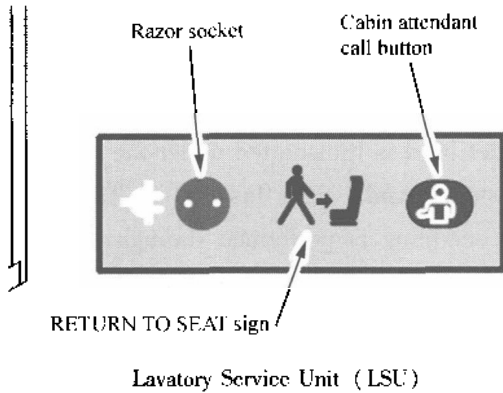
The black buttons on the panel are fuses. These switches have two or three positions. They control corresponding equipment. These indicators will illuminate when the switches beside them are turned on.

Lavatories

There are three lavatories in the cabin for comfort of the passengers and crew: one in the forward cabin near Door L1, and the other two are in the rear part of the aircraft beside Door L2 and R2. The forward one is mainly for the passengers in the Business Class and for the flight crew, while the aft two are for the passengers in the Economy Class. Each lavatory has a washroom function. Cold, hot and waste water connections, air outlet connections and fans are provided. Some aircraft have a diaper changing board in the

lavatories so that passengers can use it to attend to their baby. Disabled passengers can use the ones that are equipped with handicapped facilities.

All lavatory doors are fitted with a locking device which includes a VACANT/OCCUPIED indicator. If the indicator is red and reads OCCUPIED, the lavatory is occupied and the lavatory door is locked; if the indicator is green and reads VACANT, the lavatory door can be opened. In the event of emergency, the lavatory doors can be unlocked from the cabin side.

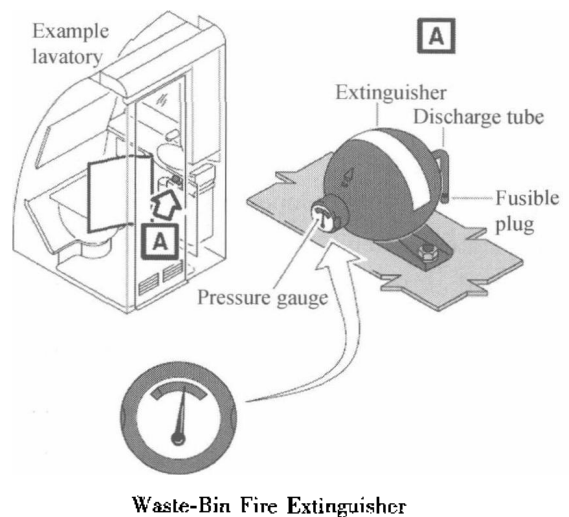


Each lavatory has one Lavatory Service Unit (LSU) consisting of three parts: the electric outlet, the "Return to Seat" sign and the "Cabin Attendant Call" button. When the plane is taking off, landing or expecting some turbulence, the "Return to Seat" sign will illuminate to tell the passenger to return to the seat. It comes on whenever the "FASTEN SEAT BELT" signs are switched on. If the passenger encounters some problems, he can

press the "Cabin Attendant Call" button to call the attendants.

There is a smoke detector installed in each lavatory ceiling panel. If it detects smoke, repetitive triple low chimes could be heard in all attendant loudspeakers every 30 seconds; the amber light flashes on the respective ACP; on the FAP a red smoke "LAV" push button light flashes; on all AIPs the pink light flashes and the affected lavatory is shown in clear wording; the lavatory indicator outside the corresponding lavatory comes on.

There is a garbage slot beside the washbasin. The garbage box is behind the service door under the basin. There's a fire extinguisher under the washbasin and behind the service door. The lavatory fire extinguishing system is completely automatic and self-contained. A fire extinguisher bottle is installed on the top panel of the waste bin. A filler tube is used to fill the container with Halon. A temperature indicator is on each waste

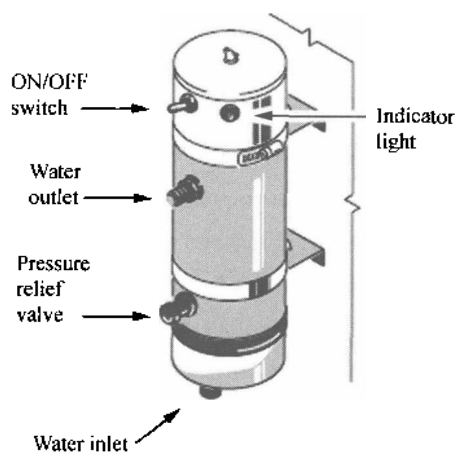


chute and gives an indication in case of excessive temperature in the waste bin area. The temperature indicator has a grey disc. At a temperature of nearly 71°C the color changes to black. A fire or overheat condition will open the release mechanism. A temperature increase from approx 71°C to 140°C (160°F to 284°F) operates the fire extinguisher within 60 seconds. When the temperature is about 79°C , the fusible material tip of the discharge tube melts. The extinguisher then discharges completely within 3 to 15 seconds. The service door should be closed tightly so that the extinguisher can work properly in any emergency situation.

There are two oxygen masks and one smoke detector in each lavatory for emergency situations.

During toilet flushing, the waste from the toilet bowl is transported under the effect of cabin differential pressure to the underfloor waste storage tanks via a flush valve. The waste tanks have a capacity of 200 liters. Waste tank servicing is performed through a single service panel located below the fuselage. If the lavatory is leaking, the cabin attendant should shut off the water supply at once. Open the access door next to the toilet bowl and the cabin attendant can see two valves. The water valve is on the right. Turning the valve to "OFF" position will shut off water supply. On the left is the vacuum flush valve which permits to close the flush valve manually. After shutting off the water supply, the cabin attendant must turn off the water heater to avoid overheating.

The water heater is located under each washbasin. It has a capacity of 1.5 liters. It is equipped with a control ON/OFF switch, an indicator "green" on light and a pressure relief valve. The water temperature range is between 45°C and 48°C . When the water temperature reaches 60°C , an overheat switch will cut the electrical supply. After having switched off the water heater, the cabin attendant must close this lavatory to the passengers.



Water Heater

The Water and Waste System

The water and waste system provides potable water distribution to the lavatories and the galleys, drainage of waste water and storage of lavatory wastes.

A large quantity of fresh water will be consumed in the galleys and lavatories during the flight. The A320 is equipped with a bleed air pressurized potable water system. Fresh

water for lavatories and galleys is provided from a 200-liter reservoir located in the pressurized underfloor area in cargo compartment. The water is distributed to the galleys and lavatories and vacuum toilet units via distribution lines located in the underfloor area of the aircraft.

A lot of waste water is produced in the galleys and lavatories during the flight. There are two waste systems in the A320. The waste from the lavatory toilet is transported to the underfloor waste stowage tanks. The maximum capacity of the waste tank is 200 liters. Waste water from the washbasins and galleys is drained overboard through two anti-ice drain masts.

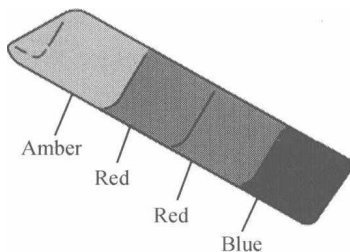
The level of the fresh water and waste water can be shown on the Forward Attendant Panel (FAP). If the cabin attendant wants to know the quantities of the fresh water and the waste, press and maintain the "IND ON" button, and they are indicated in percentage of total tanks capacities; release the button, the indications of water and waste quantities are darkened.

Communication System

The communication system includes the Interphone system, the Passenger Address system and the Call system.

The cabin interphone system provides communication and alerting facilities between flight crew and the attendant stations. It consists of the buttons on the handsets, the attendant indicator panels and the ACPs.

When the FWD or AFT pushbutton is pressed, the pink light on the respective ACP and the green light on the AIP illuminate at the related attendant station. When ALL ATTND pushbutton is pressed, the two pink lights on the ACPs and the green lights on all the AIPs come on, the message "ALL" is displayed on the AIP where the call initiates, "Conference Call" is displayed on other AIPs. A high/low chime sounds from the speakers via all attendant loudspeakers. Either stowing the handset or pressing the RESET button can reset the system.



Area Call Panel (ACP)

If the call comes from the cockpit, "CAPTAIN CALL" message appears on the AIP and a high/low chime sounds via the respective loudspeaker assigned to the called attendant station.

When "EMER CALL" pushbutton is pressed, the pink lights on all ACPs and the red light on AIPs flash, and "EMER CALL" message flashes on all AIPs. Three high/low chimes sound at all cabin and attendant loudspeakers.

In the cockpit “EMER CALL” light and ATTND light flash on the overhead panel and buzz sounds three times three seconds. When the emergency call is finished, the cabin attendant can hang up the handset or press RESET button to reset the system.

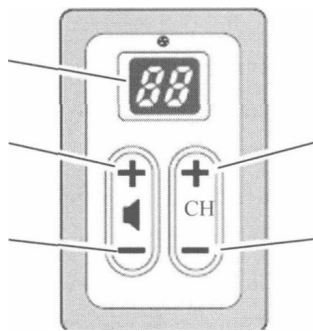
When SVCE INTPH is pressed, the interphone connections with ground maintenance service interphone jacks are established. SVCE INTPH is displayed on the AIP where call is performed and SVCE INTPH IN USE is displayed on other AIPs. This function is active only when the aircraft is on ground.

The PA system provides adequate sound levels at each passenger seat through loudspeakers. In addition, one loudspeaker is installed in each lavatory and each galley area. The volume increases automatically as soon as an engine is running and in case of depressurization. The passenger announcement is divided in two zones. It can be made from each cabin attendant handset either to each of two cabin zones independently or to the whole cabin. It is very simple to make a passenger announcement. If “PA ALL” button is pressed, message “PA ALL” is displayed on the AIP where the call is performed, and message “PA ALL IN USE” is displayed on the other AIPs. PA announcement can be made if the PUSH-TO-TALK button is pressed. When the announcement is finished, hanging up the handset or pressing the RESET button resets the system. The procedure is the same if a cabin attendant wants to call just one of the cabin areas by pressing the PA FWD button or the PA AFT button.

Passengers may need the cabin attendants' assistance and will normally press the call button on the Passenger Service Unit (PSU). As a result, the seat row numbering light illuminates. The seat row number will be indicated only on the AIP that is assigned to that particular call zone. The blue light illuminates on the respective ACP that are assigned to that particular call zone. One single high chime sounds at respective cabin and attendant loudspeakers which are assigned to that particular call zone. The cabin attendant can find the passenger very easily by the Passenger Call System. In order to reset the Passenger Call System, the cabin attendant need press the passenger's Call button again. The Call light on the PSU will flash if the aircraft is on the ground and the cabin doors are not closed.

Occasionally a passenger may contact the cabin crew from the lavatory. He can call them by pressing the Call button on the Lavatory Service Unit (LSU). When he presses the Call button, the light inside the Call button comes on. The Call light above that lavatory door and the amber light on the ACP that is assigned to that particular call zone illuminate. A high tone chime is heard. The cabin attendant can easily tell which lavatory the call is coming from by looking on the ACP or the corresponding AIP or the Call lights outside the lavatory doors. After the cabin attendant has found the passenger who is calling, she presses the call button again to reset the system.

The Passenger Entertainment System



Passenger Control Unit

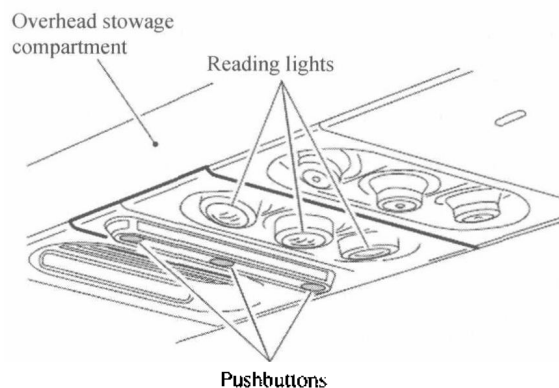
In order that the passengers can have a pleasant journey, music and radio are provided during the flight. Boarding music will be played during passengers boarding. It can be selected from the FAP. Passengers can also hear other music from the headphones in addition to the boarding music. The main switch of the audio system is the Passenger Entertainment System (PES) switch on the FAP. It provides the power to the PCU in the armrest of the passengers' seats. Pressing the PES button turns on the power, pressing it again turns off the power.

There is a PCU in the armrest of each passenger seat. Passengers can use this to control music. The right two buttons are used to select the music channels, and the left two buttons are used to control the music volume.

Lighting System

The lighting system includes not only the lights in the cabin, in the lavatory, in the galley, but also the emergency lights.

The cabin lighting system is composed of four strips of many fluorescent tubes: two strips of ceiling lights, which are installed over the aircraft center aisle, and two strips of window lights, which are installed either side of each fuselage windows below the overhead bins. Two fluorescent tubes are installed on the ceiling of the entrance. They illuminate the entrance areas and general galley area. The light control module on the FAP controls all the cabin lights. The lighting system is designed so that the ceiling and window lights can be selected together or separately, and the lighting can be selected to three different lightness levels: full brightness (BRT), half brightness (DIM1) and 10% of full brightness (DIM2). The passenger compartment illumination is switched on to full brightness in case of cabin depressurization. The CLG and WDO buttons can control all the ceiling lights and window lights. As well as



Passenger Reading Lights

the cabin lighting, one work light is provided at each attendant station and can be controlled individually by a pushbutton located at each attendant work station. General galley lighting is provided by entrance area lighting. One reading light is installed above each passenger seat to provide additional comfort to the passengers. It is a high intensity light and is individually controlled by a pushbutton installed in the PSU.

The lavatory lighting system is composed of fluorescent light and spotlight. The lavatory light is activated by the LAV button on the FAP, and also activated by the door lock. When the cabin crew presses the LAV button, the light is powered. When the door is closed and locked, the fluorescent light is turned on at its maximum and the spotlight is turned on. When the door is closed and unlocked, the fluorescent light is on 50% intensity and the spotlight is turned off. The lavatory sign is installed close to each lavatory and controlled by the lavatory lock handle. It illuminates green when the lavatory is vacant and red when the lavatory is occupied.

In the normal situation the emergency lighting system will turn on automatically in the event of failure of normal lighting system. It consists of six EXIT lights located in the vicinity of each exit doorframe and three EXIT signs (double sided) in the exit areas ceiling. They indicate the location of the exit. There are fourteen emergency ceiling lights in the cabin. The floor escape path marking system enables passengers and crewmembers to find the way out to the exits in the event of smoke within the cabin. The system includes EXIT markers and low intensity lights located close to each exit at floor level and below passenger seats. The escape indicators near the exits and doors turn red for the passengers' identification. Six Emergency Power Supply Units (EPSU) installed in the ceiling at each exit area energize all the EXIT lights/signs and floor proximity light. The escape slide lights automatically illuminate when the slide deploys. They have the same supply as the cabin emergency lights, from the power supply units.

The flashlight (stowed under the attendants' seats) is also important in an emergency situation. It is only for emergency. They will flash automatically as soon as they are taken out of their mount. When the normal AC power is lost, six Emergency Power Supply Units can power all the emergency lights for over twelve minutes. When the emergency lights don't come on automatically, they can be turned on manually. The "EMER" button on the FAP is the emergency light manual switch.

"NO SMOKING", "FASTEN SEAT BELT", "RETURN TO SEAT" and "EXIT" signs illuminate automatically in case of depressurization.

New Words

essential [i'senʃəl]
 paddle [ˈpædl]
 brake [breik]
 fuse [fjuːz]
 connection [kə'nekʃən]
 fan [fæn]
 handicapped [ˈhændi,kæpt]
 device [di'vaɪs]
 encounter [in'kauntə]
 repetitive [ri'petitiv]
 triple [ˈtripl]
 affected [ə'fektɪd]
 wording [ˈwɜːdɪŋ]
 garbage [ˈgɑːbɪdʒ]
 slot [slɒt]
 self-contained [ˈselfkən'teɪnd]
 filler [ˈfɪlə]
 tube [ˈtjuːb]
 chute [ʃuːt]
 disc [disk]
 fusible [ˈfjuːzəbl]
 melt [melt]
 bowl [bəʊl]
 transport [træns'pɔːt]
 via [ˈvaɪə, 'viːə]
 relief [ri'liːf]
 overheat [ˌəʊvə'hi:t]
 distribution [ˌdɪstri'bjuːʃən]
 consume [kən'sjuːm]
 reservoir [ˈrezəvɔː]
 line [laɪn]
 percentage [pə'sentɪdʒ]
 initiate [i'niʃieɪt]

adj. 基本的, 不可缺少的
n. 桨状物; 短桨
n. 闸, 刹车
n. 保险丝, 熔丝
n. 连接, 接线
n. 鼓风机, 风扇
adj. 残疾的
n. 装置, 设备
v. 遭遇, 遇到
adj. 重复的, 反复性的
adj. 三倍的
adj. 受到影响的
n. 用语, 措辞
n. 垃圾, 废物
n. 缝, 细长的孔
adj. 设备齐全的, 独立的
n. 装填者, 装填物
n. 管, 管子
n. 斜道, 倾斜的通道或管道
n. 圆盘; 圆板
adj. 熔解的, 可熔的
v. (使) 融化, (使) 熔化
n. 厕盆; 马桶
vt. 传送, 运输
prep. 经, 通过, 经由
n. 减缓
n. 过热
n. 分配, 分发
vt. 消耗, 消费
n. 水库, 蓄水池
n. 管道
n. 百分率, 百分比
vt. 开始, 发起

conference ['kɒnfərəns]	n. 会议
buzz [bʌz]	n. 嗡嗡声
procedure [prə'si:dʒə]	n. 程序, 手续
headphone ['hedfəʊn]	n. 双耳式耳机
compose [kəm'pəʊz]	v. 组成
strip [stri:p]	n. 条, 带
intensity [in'tensiti]	n. 亮度
identification [ai'dentifi'keɪʃən]	n. 辨认, 识别
energize ['enədʒaɪz]	vt. 使通电
mount [maʊnt]	n. 底座

Technical Terms

electrical control panel	配电板
power control panel	电源控制面板
access door	维护门
pressure relief valve	释压阀门; 释压活门
CLG (Ceiling)	天花板灯
WDO (Window)	窗灯
EPSU (Emergency Power Supply Units)	应急电源供应组件
floor proximity light	地板灯

Notes

1. If the indicator is red and reads OCCUPIED, the lavatory is occupied and the lavatory door is locked; if the indicator is green and reads VACANT, the lavatory door can be opened. 如果指示灯为红色并显示“有人”, (表示) 卫生间里有人, 门已上锁; 如果指示灯为绿色并显示“无人”, 可以打开卫生间门。

注: read 的意思为 “to indicate, register, or show”, “说明, 指示, 显示” 之意。

例: The dial reads 32℃.

刻度显示出 32℃。

2. A fire extinguisher bottle is installed on the top panel of the waste bin. A filler tube is used to fill the container with Halon. A temperature indicator is on each waste chute and gives an indication in case of excessive temperature in the waste bin area. 灭火瓶安装

在垃圾箱板顶端。填注管向灭火器内加注海伦。每个垃圾箱斜槽装有一个温度指示器，当垃圾箱附近温度过高时会发出指示。

3. A fire or overheat condition will open the release mechanism. A temperature increase from approx 71°C to 140°C (160 °F to 284 °F) operates the fire extinguisher within 60 seconds. When the temperature is about 79°C, the fusible material tip of the discharge tube melts. 当有火情或温度过高时，释放装置将会启动。温度在 71 摄氏度到 140 摄氏度之间（160 华氏度到 284 华氏度），灭火瓶将在 60 秒内工作。温度达到约 79 摄氏度时，导管上的热熔帽熔化。
4. During toilet flushing, the waste from the toilet bowl is transported under the effect of cabin differential pressure to the underfloor waste storage tanks via a flush valve. The waste tanks have a capacity of 200 liters. Waste tank servicing is performed through a single service panel located below the fuselage. 冲洗马桶时，在客舱压差的作用下，来自马桶里的污水通过冲洗活门流入地板下的污水箱。污水箱容量为 200 升。污水箱勤务通过机身下单独的维护面板完成。
5. The water heater is located under each washbasin. It has a capacity of 1.5 liters. It is equipped with a control ON/OFF switch, an indicator “green” on light and a pressure relief valve. 每个洗手池下方都有一个热水器，容量为 1.5 升，上面装有“开/关”控制电门、表示通电的绿色指示灯和释压阀门。
6. The water is distributed to the galleys and lavatories and vacuum toilet units via distribution lines located in the underfloor area of the aircraft. 通过飞机地板下的水管，水被运送到厨房、厕所和真空冲水马桶装置。
7. When “EMER CALL” pushbutton is pressed, the pink lights on all ACPs and the red light on AIPs flash, and “EMER CALL” message flashes on all AIPs. Three high/low chimes sound at all cabin and attendant loudspeakers. In the cockpit “EMER CALL” light and ATTND light flash on the overhead panel and buzz sounds three times three seconds. 当按下“紧急呼叫”按钮时，所有区域呼叫面板的粉色灯和乘务员指示面板上的红灯会闪亮，所有乘务员指示面板上“紧急呼叫”信息闪烁。客舱的和乘务员位的所有扬声器会发出三声高/低钟响。在驾驶舱，顶板上的“紧急呼叫”灯和“乘务员”灯闪烁，三秒钟内蜂鸣声响三次。
8. The cabin lighting system is composed of four strips of many fluorescent tubes: two strips of ceiling lights, which are installed over the aircraft center aisle, and two strips of window lights, which are installed either side of each fuselage windows below the overhead bins. 客舱照明系统包括四组荧光灯管：飞机中间过道上方的两组天花板灯，头顶行李箱下方、机身舷窗两侧的两组窗灯。
9. The system includes EXIT markers and low intensity lights located close to each exit at floor level and below passenger seats. The escape indicators near the exits and doors turn

red for the passengers' identification. 系统包括“出口”标识灯和低亮度灯,低亮度灯位于每个地板高度出口附近和旅客座椅下方。为便于旅客识别,在紧急出口和舱门出口的撤离指示灯会变成红色。

Exercises

I. Please answer the following questions.

1. What's the function of the red paddle of the cart?
2. What are the basic items in the galley?
3. What items does the PSU consist of?
4. What are the warnings if the lavatory is on fire?
5. How does the fire extinguisher under the washbasin work?
6. Where and how is the waste water drained?
7. What will happen if EMER CALL button is pressed?
8. How does the cabin attendant find the passenger who presses the call button in her seat?
9. What items does the cabin lighting system include?
10. What is the function of the floor escape path marking system?

II. Please fill in the blanks with the words given. Change the form where necessary.

brake	corresponding	connection	jack	repetitive	tube
slot	wording	mechanism	fusible	distribution	vicinity

1. An airplane engine is a complex _____.
2. There is an increase in production of 20% above that of the _____ period of last year.
3. A different _____ might make the meaning clearer.
4. We had spent several days in a small town and visited a number of old churches in the _____.
5. They could not agree about the _____ of the profits.
6. The car in front of me stopped suddenly and I had to _____.
7. He does not have the patience for _____ work.
8. We need to install a few more _____ in the bedroom for electrical appliance and such as TV sets, computers, air-conditioners and etc.
9. There is a close _____ between pain and tension.
10. A test _____ is closed at one end and open at the other.

III. Please translate the following sentences into English.

1. 洗手间灭火系统是全自动的和独立的。
2. 当灭火器导管上的热熔帽熔化后，灭火剂（fire extinguishing agent）将在 3 ~ 15 秒内释放。
3. 打开马桶旁的维护门，你会看到两个阀门，左边是真空冲水阀门，右边是供水阀门。
4. 前乘务员面板上的“IND ON”按钮可显示水箱剩余水量。
5. 按下“EMER CALL”按钮，客舱里会听到三声高/低钟声。
6. 客舱照明可分为三个亮度：明亮、中亮、暗亮。
7. 厨房区域的照明由入口区域灯提供。
8. 应急照明系统包括出口附近的六个出口灯。
9. 应急电源供应组件为出口灯、地板灯供电。
10. 从支架上取下应急手电筒，应急手电筒会自动亮。

IV. Please translate the following passage into Chinese.

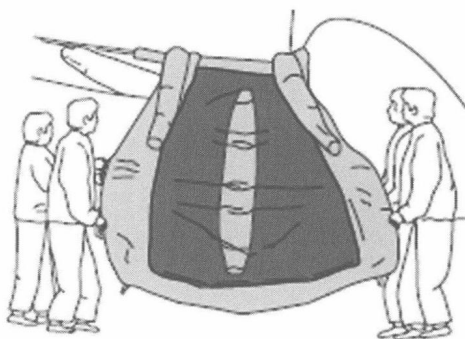
In the normal situation the emergency lighting system will turn on automatically in the event of failure of normal lighting system. It consists of six EXIT lights located in the vicinity of each exit doorframe and three EXIT signs (double sided) in the exit areas ceiling. They indicate the location of the exit. There are fourteen emergency ceiling lights in the cabin. The floor escape path marking system enables passengers and crewmembers to find the way out to the exits in the event of smoke within the cabin. The system includes EXIT markers and low intensity lights located close to each exit at floor level and below passenger seats. The escape indicators near the exits and doors turn red for the passengers' identification.

Lesson 12 Emergency Equipment and Evacuation

There are many pieces of emergency equipment on the aircraft for safety. However, they are located in different locations. In an emergency situation cabin crew are required to find and operate them quickly and properly. The locations and numbers of the emergency equipment may vary a little because of the different cabin layouts required by the airlines. Their functions and operation procedures are almost the same as we have learnt in unit six. We'll focus only on those unique in Airbus family.

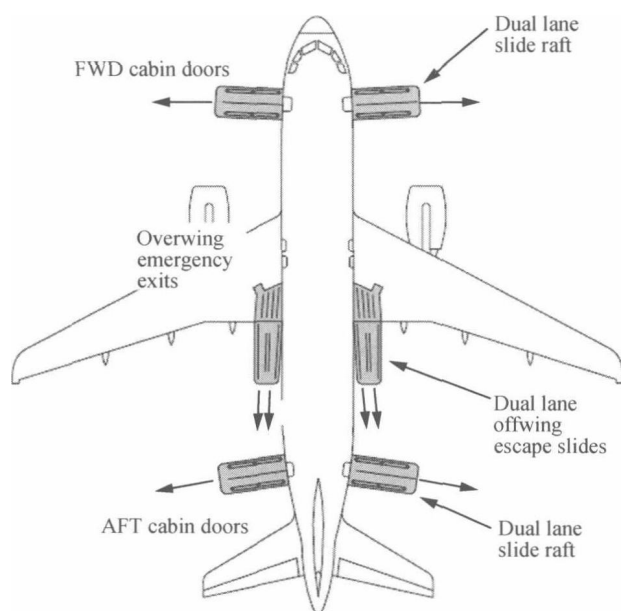
The manual release tool can be found under or above the cabin crew's jumpseats. It is used to open the oxygen panel manually if the oxygen masks above the passenger seats don't drop automatically when decompression occurs in-flight. But it must not be used until the captain declares the aircraft has descended to the safe altitude, which is generally 10 000 feet. At this altitude people can breathe without depending on the oxygen mask, and people in the cabin are allowed to move about.

There are 4 life lines in the two narrow overhead stowage compartments by the overwing exits. Once evacuating from the overwing exits, cabin crew must use the life lines to evacuate the passengers, as the wing may be slippery. Take out the life lines from the aft overwing exit, fix one end to the overwing exit frame and the other end to a fitting on the wing. Be sure to hold the line tightly. Once the cabin crew opens one or both emergency exits, the dual-lane type slide, installed in the wing fuselage facing aft of the overwing exits, automatically inflates and deploys over the wing. If it doesn't, it can also be inflated manually by pulling the red manual inflation handle installed in the exit frame. It takes about three seconds for the escape slide to be ready for evacuation. In case the overwing slide has been damaged and deflated, it can still be used as a handhold escape chute.



Handhold Escape Chute

If the emergency situation can't be controlled, the aircraft will make an emergency landing. Cabin crew must evacuate the passengers from the airplane. Normally the flight crew starts the evacuation signal or makes a passenger announcement before the emergency landing. But if there is no announcement or evacuation order from the cockpit within 30 seconds or there's a fire or smoke inside or outside the cabin, the purser will start the evacuation signal. The emergency lights come on automatically. The cabin crew must go to the exits immediately. Before opening the exit, they must make sure the door is armed and there is no fire or obstacles blocking it, then order the passengers to the door loudly and clearly. After all the passengers have evacuated, the cabin crew will check the cabin to make sure that no one is left onboard. The captain is the last one to leave the aircraft. If the aircraft makes a forced landing far away from the airport or from the rescue operations, each cabin attendant is required to take emergency equipment with them, and as much drinks and food as possible, while evacuating.



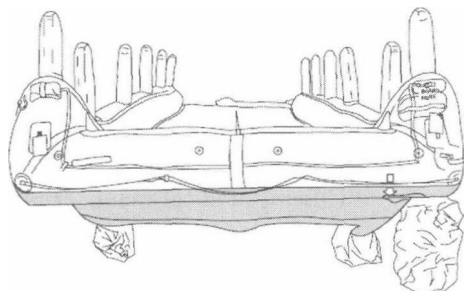
Door and Overwing Slide Location

When the aircraft makes an emergency landing on land, cabin crew will determine which exits could be used to evacuate the passengers because the attitude of the airplane can vary depending on the type of landing. We have learned that the normal sill height of A320 is 3.42 meters and wing height is 2.63 meters. But if the aircraft landed with the nose gear down and main gears up, heights of the forward sill, the aft and the wing are 3.42 meters, 1.4 meters and 1.2 meters respectively. If the aircraft landed with the nose gear up and main gears down, heights of the forward sill,

the aft and the wing are 1.80 meters, 5.20 meters and 2.9 meters respectively. If it is a belly landing (gear-up landing), heights of the door sill and the wing are 2.1 ~ 2.6 meters and 1.20 meters respectively. All the exits are available except the overwing exits because in this attitude the engines may have ground friction and easily be on fire. Whatever the airplane attitude is, the cabin crew should use all the exits once there is no fire or there are no obstacles blocking the door. The evacuation should take no more than 90 seconds.

If the aircraft makes a ditching, cabin crew will have to evacuate the passengers on water. The procedure is the same as the landing evacuation until the passengers come to the door. The survival kit should be attached to each slide/raft during preparation. When the slide/raft is detached from the plane, the survival kit will flow away with the slide/raft.

As soon as the slide/raft inflates, the passengers are required to start boarding immediately. They should get onto the slide/raft two one time and sit on each side to



Raft

balance the slide/raft. Each of the four cabin doors has a slide/raft. They can be used as an escape slide and an inflatable raft. The deployment and inflation of the slide/raft is automatically initiated within three seconds when the door is opened in "ARMED" mode. If the automatic inflation is not initiated, the "red" manual inflation handle, located at the right hand side of the slide/raft, has to be pulled. Each slide/raft contains the sea anchor, the life line,

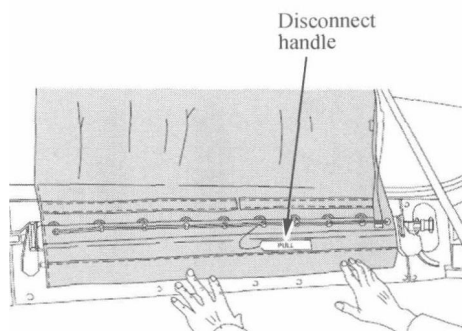
the locator light, the light, the boarding handle, the canopy support and a knife. The slide/raft will load 44 persons, and the overload capacity is 55 persons.

Once the passengers have boarded on the slide/raft, the cabin crew must disconnect this slide/raft from the airplane by lifting up the flap, pulling the disconnecting handle, and cutting off the mooring line with the knife in the slide/raft.

Generally the overwing exits are not used for evacuation on water. However, it can be used if there is a fire in the cabin or the rescue is near.

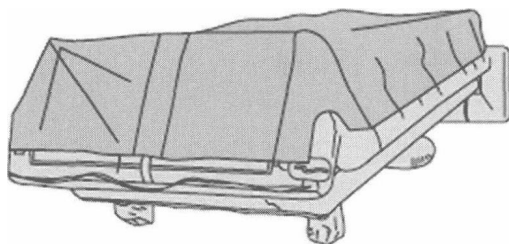
Only after ditching, if it happens that one cabin door is inoperative, its corresponding slide/raft can be disconnected, transported and operated from any other cabin door, which has already been operated and its slide/raft has been disconnected.

In the event of ditching, it may be necessary to evacuate the airplane using the portable life raft. The life raft is stowed in the overhead stowage compartment near the door R2. In the emergency situation, the cabin crew should take the life raft out and open it. Tie the mooring line to some fixed places near the exit, such as a passenger seat, and then push it out of the exit. The life raft will be inflated automatically. Once the raft is deployed, the



Slide/Raft Disconnection

boarding station, where the passengers can board the raft, can be seen. The sea anchor is put into water to reduce the amount of drifting. A knife is attached to the surface of the life raft to cut the mooring line. The life line and heaving line are attached to the outer edge of the raft to allow the passengers to hold on the raft while they wait to board the raft. There are several lights on the raft. They are installed to provide a pointer reference for the survivors in water and to aid the rescue operations. The lights automatically illuminate when the raft comes in contact with water and remain illuminated until rescue is completed. If the raft has not been inflated enough, it can be inflated manually by attaching the inflation handle into the valve. The contents of the life raft include a sea anchor, a life line, a canopy, a knife, a heaving line, the inflation handle, the manual inflation valve and the boarding station.



Canopy

The life raft will load 6 persons, and the overload capacity is 9 persons. The canopy of the raft is attached to the left side. It gives the occupants protection against environmental conditions and is resistant to wind. When erecting the canopy, the cabin crew should locate the canopy mast in the center of the

raft first, and then cover the canopy. The color of the canopy is generally red or orange, which makes it easy to be found in the sea.

New Words

unique [ju:'ni:k]

friction ['frikʃən]

survival [sə'vaivəl]

balance ['bæləns]

canopy ['kænəpi]

overload [ˌəʊvə'ləʊd]

disconnect [ˌdiskə'nekt]

drift [drift]

pointer ['pɔɪntə]

reference ['refrəns]

adj. 唯一的, 独特的

n. 摩擦, 摩擦力

n. 生存, 幸存

n. 平衡

n. 天篷, 遮篷

n. 超载

v. 断开, 拆开

n. 漂流物, 漂流

n. 指示器, 指示方向

n. 参考

environmental [in,vaiə'rən'mentl]

resistant [ri'zistənt]

erect [i'rekt]

mast [mɑ:st]

adj. 周围的, 环境的

adj. 抵抗的, 有抵抗力的

vt. 使竖立, 使直立

n. 桅, 桅杆, 柱

Technical Terms

manual release tool

survival kit

life raft

locator light

boarding handle

canopy support

mooring line

sea anchor

boarding station

manual inflation valve

heaving line

canopy mast

人工释放工具

救生包

(圆形) 救生船

定位灯

登筏手柄

天棚支柱

连接线; 系留绳

海锚

登筏位置

人工充气阀门

手抓绳

顶棚支柱

Attachment: Contents of the Survival Kits

1) Kit 1

dehydrated sponge

bailing bucket

whistle

raft repair kit

sea dye marker

signaling mirror

survival manual

canteen pkg water

knife pkg

light pkg water activated

first aid equipment

酒精棉

舀水桶

哨子

救生筏修补工具

海水着色剂

信号镜/反光镜

救生手册

饮用水

多用刀

活化水

急救装置

2) Kit 2

burn ointment	外伤药膏
swales antiseptic	防腐剂
water purification tablets	海水淡化药片
ammonia inhalants	清醒剂
sea sickness tablets	晕船药
night & day flares	信号弹
3) hand pump	手动充气泵
4) canopy mast	顶棚支柱
5) canopy	顶棚

Notes

1. But it must not be used until the captain declares the aircraft has descended to the safe altitude, which is generally 10 000 feet. At this altitude people can breathe without depending on the oxygen mask, and people in the cabin are allowed to move about. 直到机长宣布飞机已下降到安全高度、允许客舱人员四处走动后，乘务员才能使用人工释放工具。安全高度通常为 10 000 英尺。在这个高度人们可以自主呼吸，无需使用氧气面罩。
2. Once the cabin crew opens one or both emergency exits, the dual-lane type slide, installed in the wing fuselage facing aft of the overwing exits, automatically inflates and deploys over the wing. If it doesn't, it can also be inflated manually by pulling the red manual inflation handle installed in the exit frame. 一旦乘务员打开一个或两个紧急出口，安装在翼上出口后面的双通道滑梯将自动充气并越过机翼展开。如果未能充气，拉一下翼上出口门框内的红色人工充气手柄可人工充气。
3. If the aircraft makes a forced landing far away from the airport or from the rescue operations, each cabin attendant is required to take emergency equipment with them, and as much drinks and food as possible, while evacuating. 如果飞机在远离机场或营救人员的地方迫降，乘务员在撤离时应携带应急设备和尽可能多的饮料和食物。
4. All the exits are available except the overwing exits because in this attitude the engines may have ground friction and easily be on fire. 机腹着陆时除翼上出口外其他出口都可以使用，因为这种姿态发动机会和地面产生摩擦，易于着火。
5. Each of the four cabin doors has a slide/raft. They can be used as an escape slide and an inflatable raft. The deployment and inflation of the slide/raft is automatically initiated within three seconds when the door is opened in "ARMED" mode. 四个舱门都有滑

梯/救生筏。它们可以用作撤离滑梯和可充气的救生船。当舱门在予位模式时打开,滑梯/救生筏将在三秒内自动展开并充气。

6. Once the passengers have boarded on the slide/raft, the cabin crew must disconnect this slide/raft from the airplane by lifting up the flap, pulling the disconnecting handle, and cutting off the mooring line with the knife in the slide/raft. 一旦旅客登上滑梯/救生筏,乘务员揭开盖布,拉一下断开手柄,用滑梯/救生筏上的刀割断系留绳,使滑梯/救生筏与飞机分离。
7. Only after ditching, if it happens that one cabin door is inoperative, its corresponding slide/raft can be disconnected, transported and operated from any other cabin door, which has already been operated and its slide/raft has been disconnected. 水上迫降后,如果一个舱门失效,取下相应的滑梯/救生筏,运送到其他舱门并装好。那些舱门应已经操作过,其滑梯/救生筏已与飞机分离。
8. In the emergency situation, the cabin crew should take the life raft out and open it. Tie the mooring line to some fixed places near the exit, such as a passenger seat, and then push it out of the exit. The life raft will be inflated automatically. Once the raft is deployed, the boarding station, where the passengers can board the raft, can be seen. 紧急情况下,乘务员应取出救生船并打开。把系留绳系在出口附近的固定处,如旅客座椅,然后把救生船推出舱门。救生船将自动充气。一旦救生船展开,就能看到登筏处,旅客从这里可以登上救生船。
9. There are several lights on the raft. They are installed to provide a pointer reference for the survivors in water and to aid the rescue operations. The lights automatically illuminate when the raft comes in contact with water and remain illuminated until rescue is completed. 救生船上有好几盏灯,目的是为水里的幸存者提供方位参照和为救援者提供帮助。当救生船和水接触后,灯自动亮,并持续到救援结束。

Exercises

1. Please answer the following questions.

1. In what situation is the manual release tool used?
2. What is the safe altitude?
3. If passengers have to evacuate from the overwing exits, how does the cabin crew operate the lifeline?
4. In which situation can the purser start the evacuation?
5. If the aircraft makes a belly landing, which exits are not recommended to use? And why?
6. What must the cabin attendants do during ditching preparation?

7. When can the passengers be allowed to board the slide/raft?
8. What are the functions of the slide/raft?
9. If the slide/raft fails to inflate, what is the cabin attendant going to do?
10. What is the color of the canopy? why?

II. Please fill in the blanks with the words given. Change the form where necessary.

unique	fitting	balance	rescue	overload	reference
survivor	occupant	resistant	erect	drift	pointer

1. I found it hard to keep my _____ on the icy path.
2. There was only two _____ of the plane crash.
3. I am in a rather _____ position, as my job is different from anyone else's.
4. They _____ the ELT at the top of the mountain and sent the distress signal.
5. The life boat was sent out to _____ the sailors from the sinking ship.
6. This book is for _____ only.
7. To help the youngsters grow healthy and defeat-_____, it would be best to let them fall in defeats and then pick themselves up again.
8. News of the robberies frightened many people into _____ new locks to their doors.
9. He shrugged his low opinion of the _____ of the room.
10. A tiny fishing boat was _____ slowly along.

III. Please translate the following sentences into English.

1. 失压发生后，只有在飞机下降到了安全高度，乘务员才能使用人工释放工具。
2. 翼上出口附近的两个小的头顶行李箱里存放有四根救生绳。
3. 如果滑梯未能充气，可拉一下滑梯右上侧的红色人工充气手柄。
4. 通常情况下，由驾驶舱机组发出撤离指令。
5. 机腹着陆时，乘务员最好不要使用翼上出口，怕油箱会起火爆炸。
6. 在水上迫降的撤离准备中，乘务员一定要记住把救生包系在每个滑梯/救生筏上。
7. 登上滑梯/救生筏后，旅客应两人一组相向而坐，以保持平衡。
8. 滑梯/救生筏正常可容纳44人，最多不超过55人。
9. 旅客在水里等待登筏时，可抓住手抓绳。
10. 顶棚的颜色通常为红色，以便于营救人员识别。

IV. Please translate the following passage into Chinese.

In the emergency situation cabin crew should take the life raft out and open it. Tie the mooring line to some fixed places near the exit, such as a passenger seat, and then push it

out of the exit. The life raft will be inflated automatically. The sea anchor is put into water to reduce the amount of drifting. A knife is attached to the surface of the life raft to cut the mooring line. The life line and heaving line are attached to the outer edge of the raft. They allow the passengers to hold on the raft while they wait to board the raft. There are several lights on the raft. The lights automatically illuminate when the raft comes in contact with water and remain illuminated until rescue is completed. If the raft has not been inflated enough, it can be inflated manually by attaching the inflation handle into the valve.

Lesson 13 The A320 Single Aisle Family

The A320 series include the A318, the A319, the A320 and the A321. They are short-to-medium range commercial passenger aircraft. It was the first airliner with a digital fly-by-wire flight control system, where the pilot controls flight surfaces through the use of electronic signals rather than mechanically with pulleys and hydraulic systems. Designed to optimize revenue through cabin adaptability and passenger comfort, the A318, A319, A320 and A321 make up the world's most profitable single-aisle aircraft family. Featuring the most modern fly-by-wire technology available on any single-aisle aircraft, they ensure savings in every element of direct operating cost and provide operators with the highest degree of commonality and economy for aircraft in the 100 ~ 220 seat categories.

The introduction of fly-by-wire enabled Airbus to develop a family of aircraft sharing the same cockpit and the same flight handling characteristics. Fly-by-wire is an electronically managed flight control system, which uses computers to make aircraft easier to handle while further enhancing safety. First introduced on a commercial jetliner on the Airbus A320 in 1988, it has become an industry standard. Pilots maneuver their aircraft by controlling the moveable parts, known as flight control surfaces, on the aircraft's wings and tail plane. Fly-by-wire replaces the mechanical linkage between the pilot's cockpit controls and the moving surfaces by lighter electrical wires.

The A320 Family's optimized cabin cross-section — the widest single-aisle fuselage on the market — sets new standards for passenger cabin flexibility in this segment. It allows for top-of-the-range comfort with wider seats and aisles, or an extra-wide aisle for the fast turnarounds that are essential in the low-cost markets. Furthermore, the superior cabin size and shape allow larger overhead stowage to be fitted for faster boarding and deplaning as well as greater convenience.

The family's impressive level of dispatch reliability further enhances profitability and passenger service. The wider fuselage also provides unmatched cargo capability and the A319, A320 and A321 are unique in their category in offering a containerized cargo loading system that is essential for profitable cargo operations. This system is compatible with the worldwide standard wide body system, which reduces ground equipment and handling costs.

In addition, the A320 Family is an environmentally responsible neighbor, offering the

lowest fuel burn, emissions and noise footprints in its class.

The A320 Family provides operators with tremendous flexibility in matching the right aircraft to specific route requirements through Dynamic Capacity Management. All A320 Family members share the same type rating, therefore pilots qualified on one can fly any of the others without additional training, and the aircraft can all be maintained by the same team of mechanics.

The twin-engine A319, A320 and A321 can be powered by either CFM International CFM56 or International Aero Engines V2500 engines, while the A318 is offered with CFM56 engines or Pratt & Whitney PW6000 engines.

The width and the height of the A320 series are the same but the length is different. The width of the A320 series is 34.10 meters and the height is 11.76 meters. In the A320 family cabins, seat pitch can be adapted in units of one inch. Galleys, lavatories and stowage bins can be located in different numbers, groupings and locations. In-flight entertainment can be incorporated in the seats or screens mounted on partitions below the overhead stowage compartments. These make for an almost infinite variety of cabin interiors. The configuration and flight data is different because of the difference in length. In China Mainland there are only the A319, the A320 and the A321 operating in the airlines up to now.

The latest member of the family, the A318, was launched in April 1999 to meet airlines' needs at the smaller end of the market for low-density, high-frequency operations. The first A318 entered service in July 2003. The aircraft, powered by CFM56-5 or PW6000 engines, can typically seat 107 passengers in a typical two-class cabin layout or 117 passengers in a single-class cabin layout over a range of up to 3 250 nm/6 000 km. The maximum cabin width is 3.70 meters. Its wing span is 34.09 meters. The maximum takeoff weight is 59 tons. The aircraft offers the widest cabin in its class.

The A319 is a short-range transport aircraft and its length is 33.84 meters. Its maximum range is 5 550 kilometers and maximum takeoff weight is 64 tons. The maximum operating altitude of the A319 is 39 000 feet (11 900 meters). The capacity of the A319 is 124 passengers, 8 or 12 passengers in the Business Class and 116 or 112 passengers in the Economy Class. The passenger seating layout may be varied to suit operating requirements up to a certified maximum of 135 seats. The A319 was the first member of the A320 Family to bring a new standard of comfort and technology to markets previously only served by the smallest jet aircraft. That is why the A319 continues to outsell its direct competitor. There are 4 attendant seats in the cabin. Three cargo compartments are installed in the lower deck, and their maximum load capacity is 6 695 kilograms. The A319 is equipped with four passenger doors located in the forward and aft section, two overwing emergency exits, and

two sliding windows in the cockpit. There are 2 galleys and 3 lavatories onboard.

Launched in 1984, the A320 entered airline service in April 1988 and rapidly established itself as the industry standard for passenger comfort and economy on short-and-medium haul routes. The A320 is in widespread service on five continents, flying routes that range from short European commuter sectors, through European charter operations, to coast-to-coast US flights. The A320 is 37.57 meters long and its maximum range is 5 400 kilometers and maximum takeoff weight is 73 500 kilograms. It can hold 158 passengers, 8 in the Business Class and 150 in the Economy Class. The passenger seating layout may be varied to suit operating requirements up to a certified maximum of 179 passenger seats. There are 6 cabin attendant jumpseats, 2 galleys and 3 lavatories in the cabin. Eight exits are located on both sides of the A320, two overwing exits on each side.

The A321 is the largest member of the A320 Family. Entering service in early 1994, it offers the best seat-mile costs of any single-aisle aircraft. It is a lengthened, minimum change version of the A320. The wing area is slightly enlarged and the undercarriage is strengthened, with higher thrust variants. Compared with the A320, it is 44.50 meters long, its maximum range is 5 600 kilometers and the maximum takeoff weight is 83 000 kilograms. The A321 accommodates 185 passengers in a two-class configuration, 16 in the Business Class and 169 in the Economy Class, and up to 220 passengers in a high-density configuration. There are a total of 8 attendant seats, 3 galleys and 4 lavatories in the cabin. The A321 is equipped with four passenger doors located in the forward and aft section, 4 emergency exits located in front of and behind the wing, and two sliding windows in the cockpit. There are no overwing exits. The four middle exits have the same function as the overwing exits. They are only used in an emergency situation.

The four members of the A320 Family, the A318, A319, A320 and A321, are the preferred choice in the single-aisle market due to its single solution for multiple markets, widest seats and widest aisle, and maximum commonality.

New Words

digital [ˈdɪdʒɪtəl]

adj. 数字的

pulley [ˈpʊli]

n. 滑轮

hydraulic [haɪˈdrɔːlik]

adj. 液压的

optimize [ˈɒptimaɪz]

vt. 使最优化

revenue [ˈrevənjuː]

n. 收入, 收益

adaptability [əˌdæptəˈbɪlɪti]

n. 适应性

commonality [ˌkɒməˈnæliti]	n.	共性, 公共
economy [i(:)ˈkɒnəmi]	n.	经济, 节约, 经济实惠
enhance [inˈhɑ:ns]	vt.	提高, 增强
maneuver [məˈnu:ɪvə]	vt.	机动 (飞行); 操纵
linkage [ˈlɪŋkɪdʒ]	n.	连接
flexibility [ˌfleksəˈbɪləti]	n.	弹性, 灵活性, 机动性
segment [ˈseɡmənt]	n.	部分
turnaround [ˈtɜ:nəˈraʊnd]	n.	周转; 转变, 转向
dispatch [disˈpætʃ]	n.	派遣
unmatched [ˈʌnˈmætʃt]	adj.	无比的, 无匹敌的, 不相配的
containerize [kənˈteɪnəraɪz]	vt.	用集装箱装
compatible [kəmˈpætəbl]	adj.	一致的
emission [iˈmɪʃən]	n.	(光、热等的) 散发, 发射, 喷射
footprint [ˈfʊtˌprɪnt]	n.	足迹, 脚印
tremendous [triˈmendəs]	adj.	极大的, 巨大的
dynamic [daɪˈnæmɪk]	adj.	动态的, 动力的, 动力学的,
rating [ˈreɪtɪŋ]	n.	类别, 分类
exceptional [ɪkˈsepʃənəl]	adj.	异常的, 例外的
transition [trænˈzɪʒən, -ˈsɪʃən]	n.	转变, 转换
grouping [ˈɡru:pɪŋ]	n.	分组
partition [pɑ:ˈtɪʃən]	n.	分割, 分开, 隔离物
infinite [ˈɪnfɪtɪ]	adj.	无穷的, 无限的
launch [lɔ:ntʃ, lɑ:ntʃ]	vt.	发动, 发起
density [ˈdensɪti]	n.	密度
frequency [ˈfri:kwənsi]	n.	频率, 周率
previously [ˈpri:vɪəsli]	adv.	先前, 以前
outsell [aʊtˈsel]	vt.	卖得比...多
competitor [kəmˈpetɪtə]	n.	竞争者
commuter [kəˈmjʊtə]	n.	经常往返者
sector [ˈsektə]	n.	部分, 部门, 地区
charter [ˈtʃɑ:tə]	vt.	租, 包 (机、船、车等)
coast [kəʊst]	n.	海岸
undercarriage [ˈʌndəˌkæərɪdʒ]	n.	(飞机的) 起落架
variant [ˈvɛəriənt]	n.	变量
multiple [ˈmʌltɪpl]	adj.	多样的, 多重的

Technical Terms

fly-by-wire	电传操纵系统
flight control surface	飞行舵面
hydraulic system	液压系统
Dynamic Capacity Management	动态电容管理
spare parts	零配件

Notes

1. It was the first airliner with a digital fly-by-wire flight control system, where the pilot controls flight surfaces through the use of electronic signals rather than mechanically with pulleys and hydraulic systems. 它是首架数字式电传操纵系统客机，飞行员使用电子信号取代滑轮和液压系统等机械装置来操纵飞行舵面。
2. Featuring the most modern fly-by-wire technology available on any single-aisle aircraft, they ensure savings in every element of direct operating cost and provide operators with the highest degree of commonality and economy for aircraft in the 100 ~ 220 seat categories. A320 系列飞机的所有机型均采用最现代的电传操纵技术，确保在各个方面节约直接运营成本，并为运营商提供 100 至 220 座级飞机中最大的操作通用性和经济性。
3. Pilots maneuver their aircraft by controlling the moveable parts, known as flight control surfaces, on the aircraft's wings and tail plane. Fly-by-wire replaces the mechanical linkage between the pilot's cockpit controls and the moving surfaces by lighter electrical wires. 通过操纵飞机机翼和尾翼上的活动部件，也被称为飞行舵面，飞行员作机动飞行。电传操纵系统用更轻的电线来代替机械连接装置，把驾驶舱控制装置和舵面连接起来。
4. It allows for top-of-the-range comfort with wider seats and aisles, or an extra-wide aisle for the fast turnarounds that are essential in the low-cost markets. Furthermore, the superior cabin size and shape allow larger overhead stowage to be fitted for faster boarding and deplaning as well as greater convenience. 通过加宽座椅，提供了最大程度的舒适性；而更宽的通道对于需要快速周转的低成本市场是很重要的。此外，优越的客舱尺寸和形状可以安装较大的头顶行李架，一方面更加方便，同时也可以加快上下飞机的速度。
5. The family's impressive level of dispatch reliability further enhances profitability and passenger service. 该系列飞机的高签派可靠率进一步增强了盈利性和为旅客提供

服务的能力。

6. The wider fuselage also provides unmatched cargo capability and the A319, A320 and A321 are unique in their category in offering a containerized cargo loading system that is essential for profitable cargo operations. This system is compatible with the worldwide standard wide body system, which reduces ground equipment and handling costs. 较宽的机身还提供了无与伦比的货运能力。A319、A320 和 A321 是该级别飞机中唯一能够提供集装箱货运装载系统的飞机，而这个系统对货运盈利是很重要的。该系统与全球标准宽体飞机装载系统兼容，从而减少了地面设备，降低了装卸成本。
7. The A320 Family provides operators with tremendous flexibility in matching the right aircraft to specific route requirements through Dynamic Capacity Management. 通过动态电容管理，空客 320 系列为营运商在具体航路和与之相匹配的合适机型方面提供最大限度的灵活性。
8. The latest member of the family, the A318, was launched in April 1999 to meet airlines' needs at the smaller end of the market for low-density, high-frequency operations. 为满足航空公司在低端市场较低的、低密度、高频率的运行要求，1999 年开始启动空客 318 项目，它是 320 系列的最新成员。

Exercises

I. Please answer the following questions.

1. What kind of aircraft is the A320 Family?
2. What's the most important technology improvement to the A320 Family?
3. Why is the A320 Family called an environmentally responsible neighbor?
4. What is the fly-by-wire flight control system?
5. What are the commonalities among the A320 Family?
6. What purpose is the A318 designed for?
7. Why can the A319 outsell its competitor?
8. How many passengers can the A321 hold in a high-density configuration?
9. Where are the emergency exits for A321?
10. What are the advantages of the A320 Family?

II. Please fill in the blanks with the words given. Change the form where necessary.

enhance	linkage	segment	turnaround	unmatched	compatible
emission	launch	commuter	density	optimize	transition

1. Small towns have a lower population _____ than big cities.
2. These actions are not _____ with his character.
3. We college students should _____ our cultural quality.
4. The Student Union _____ an activity of "Showing Loving Hearts for the Disabled" last Saturday.
5. They look just like any other _____ on their way to work in the downtown area.
6. Such a habit can cause waste of much electricity and energy, and result in the _____ of carbon (碳).
7. The company controls this _____ of the market.
8. How to _____ them efficiently is still a question.
9. Luckily for this group, career _____ help is readily available.
10. Shangri-La, a place of _____ beauty, attracts a large number of visitors, esp. in summer.

III. Please translate the following sentences into English.

1. 空客 320 是首架数字式电传操纵系统飞机。
2. 空客 320 系列宽度、高度完全一样，只有长度不同。
3. 在空客 320 系列的客舱里，座椅间距可以按英寸来调整。
4. 因为飞机长度不同，所以空客 320 系列的客舱布局和飞行数据也不同。
5. 空客 318 典型的两舱布局可提供 107 个旅客座位。
6. 空客 319 批准的最大载客量为 135 人。
7. 空客 319 最大航程为 5500 公里。
8. 空客 320 客舱共有 8 个出口，其中包括 4 个翼上出口，左右各 2 个。
9. 空客 321 是空客 320 系列中载客量最大的飞机，单舱布局时可容纳 220 名旅客。
10. 空客 321 共有 4 个紧急出口，分别位于机翼的前面和后面。

IV. Please translate the following passage into Chinese.

The A321 is the largest member of the A320 Family. It offers the best seat-mile costs of any single-aisle aircraft and is even on a par with wide body efficiency, bringing a new dimension to profitability. It is a lengthened, minimum change version of the A320. The wing area is slightly enlarged and the undercarriage is strengthened, with higher thrust variants. The A321 accommodates 185 passengers in a two-class configuration, and up to 220 passengers in a high-density configuration. The A321 is equipped with four passenger doors located in the forward and aft section, 4 emergency exits located in front of and behind the wing, and two sliding windows in the cockpit. The four middle exits are located the wings and have the same function as the overwing exits. They are only used in emergency situation.

Appendix 1 Abbreviations in the Flight Attendant Manual

A

AAP	Aft Attendant Panel	后乘务员面板
A/C	Aircraft	飞机
AC	Alternate Current	交流电
ACP	Area Call Panel	区域呼叫面板
AIP	Attendant Indication Panel	乘务员指示面板
AFT	After	后面的
ALT	Altitude	高度
APU	Auxiliary Power Unit	辅助动力装置
ATTND	Attendant	乘务员

B

BAT	Battery	电池，电瓶
BGM	Background Music	背景音乐
BRT	Bright	明亮

C

C	Centigrade	摄氏度
C/A	Cabin Attendant	乘务员
CAOM	Cabin Attendant Operation Manual	乘务员操作手册
CAPT	Captain	机长
CAUT	Caution	小心
C/B	Circuit Breaker	跳开关
CIDS	Cabin Intercommunication Data System	客舱内部通讯数据系统
CLG	Ceiling	天花板

CLR	Clear	清除
CM	Crew Member	机组成员
COMD	Command	指令, 命令
COMP	Compartment	舱
CP	Chief Purser	主任乘务长
CTR	Center	中央, 中心

D

DC	Direct Current	直流电
DEST	Destination	目的地, 终点
DIST	Distance	距离
DU	Display Unit	显示器, 显示装置

E

EMER	Emergency	紧急情况
ENG	Engine	发动机
EVAC	Evacuation	撤离

F

F/A	First Aid	急救
FAP	Forward Attendant Panel	前乘务员面板
FC	First Class	头等舱
FAOM	Flight Attendant Operation Manual	乘务员操作手册
F/F	Full Face (smoke mask)	全面式 (防烟面罩)
FL	Flight Level	飞行高度
FLT CTL	Flight Control	飞行控制
F/O	First Officer	副驾驶
FT	Foot, Feet	英尺
FWD	Forward	前面的

G

GMT	Greenwich Mean Time	格林威治标准时间
GND	Ground	地面

H

HP	High Pressure	高压
----	---------------	----

I

ILS	Instrument Landing System	仪表着陆系统
INOP	Inoperation	失效, 故障
INTPH	Interphone	内话

K

KG	Kilogram	公斤
KT	Knot	节 (= 海里/小时)

L

L	Left	左
LAV	Lavatory	卫生间
LDC	Landing	着陆
L/G	Landing Gear	起落架
LH	Left Hand	左边
LP	Low Pressure	低压
LS	Loudspeaker	扩音器, 喇叭
LSU	Lavatory Service Unit	卫生间服务组件
LSD	Liquid Crystal Display	液晶显示器
LT	Light	灯
LVL	Level	水平, 水平面

M

MB	Millibar	毫巴
MEL	Minimum Equipment List	最低设备清单
MIC	Microphone	麦克风
MMO	Maximum Operating Mach	最大马赫操纵数
MN	Minute	分钟
MRT	Manual Release Tool	人工释放工具
MTW	Maximum Taxi Weight	最大滑行重量
MTOW	Maximum Takeoff Weight	最大起飞重量
MZFW	Maximum Zero Fuel Weight	最大无燃油重量

N

NM	Nautical Miles	海里
----	----------------	----

O

OCC	Occupied	占用的
OVHT	Overheat	过热

P

P	Purser	乘务长
PA	Passenger/Public Announcement/Address	旅客广播
PAX	Passenger	旅客
P/B	Pushbutton	按钮
PBE	Protective Breathing Equipment	呼吸保护设备
PCU	Passenger Control Unit	旅客控制组件
PES	Passenger Entertainment System	旅客娱乐系统
PIU	Passenger Information Unit	旅客信息组件
PNL	Panel	面板
PSU	Passenger Service Unit	旅客服务组件
PTP	Programming and Test Panel	编程和测试面板
PTT	Push To Talk	按下通话
PWR	Power	电源

Q

QTY	Quantity	量, 数量
-----	----------	-------

R

RH	Right Hand	右边
R/W	Runway	跑道

S

SEL	Selector	选择器
SPD	Speed	速度
SVCE	Service	服务
SW	Switch	开关, 电闸
SYS	System	系统

T

TEMP	Temperature	温度
T/O	Take Off	起飞

V

V	Volt	伏特
VHF	Very High Frequency	甚高频

W

WDO	Window	窗
-----	--------	---

Y

YC	Tourist Class	经济舱
----	---------------	-----

Z

ZFW	Zero Fuel Weight	无燃油重量
-----	------------------	-------

Appendix 2 Glossary

A

- abnormal [æb'nɔ:məl]
 accessible [ək'sesəbl]
 accidental [,æksi'dentl]
 accommodate [ə'kɒmədeɪt]
 activate ['æktiveɪt]
 actuator ['æktjueɪtə]
 adaptability [ə,dæptə'biliti]
 additional [ə'dɪʃənl]
 address [ə'dres]
 adequate ['ædikwɪt]
 adjust [ə'dʒʌst]
 adverse [əd've:s]
 affected [ə'fektɪd]
 afloat [ə'fləʊt]
 agent ['eidʒənt]
 aileron ['eɪləron]
 airflow ['eə,fləʊ]
 airframe ['eəfreɪm]
 airway ['eəwei]
 airy ['eəri:]
 aisle [aɪl]
 alert [ə'lɜ:t]
 alphabet ['ælfəbɪt]
 alphanumeric [ælfənju:'merɪk]
 alternate [ɔ:l'tə:nɪt]
 altitude ['æltɪtju:d]
- adj.* 反常的, 异常的
adj. 易得到的, 易接近的
adj. 意外的, 偶然的
vt. 适应, 使配合, 向...提供
vt. 使活动
n. 制动器, 传动装置
n. 适应性
adj. 另外的, 附加的, 额外的
n. 致辞, 演讲
adj. 适当的, 足够的
vt. 调整, 调节
adj. 不利的
adj. 受到影响的
adj. 飘浮的
n. 制剂, 引起变化的物质
n. 副翼
n. 气流
n. 机身
n. (肺的) 气道; (麻醉时用的) 导气管
adj. 空气的, 空中的, 通风的
n. 过道, 通道
n. 警惕, 警报
v. 警戒
n. 字母表
adj. 字母数字的
adj. 预备的, 备用的, 交替的
n. (尤指海拔) 高度

amber [ˈæmbə]
 amplification [ˌæmplɪfɪˈkeɪʃən]
 analysis [əˈnælɪsɪs]
 anchor [ˈæŋkə]
 antifreeze [ˈæntɪˌfriːz]
 antiseptic [ˌæntɪˈseptɪk]
 appealing [əˈpiːlɪŋ]
 approximately [əˈprɒksɪˈmætlɪ]
 arm [ɑːm]
 assess [əˈses]
 assignment [əˈsainmənt]
 associate [əˈsəʊʃieɪt]
 attach [əˈtætʃ]
 attitude [ˈætɪtjuːd]
 audio [ˈɔːdiəʊ]
 auxiliary [ɔːgˈzɪljəri]
 available [əˈveɪləbl̩]
 axe [æks]

adj. 琥珀色（黄色）的
n. 扩大
n. 分析，分析报告
n. 锚
n. <美> [化] 防冻剂
adj. 防腐的，杀菌的，消过毒的
adj. 吸引人的
adv. 近似地，大约
v. 予位
vt. 估定，评定
n. 分配，委派，任务
adj. 相关的；副的
vt. 缚上，系上，贴上
n. 姿势，姿态
adj. 音频的，声频的，声音的
adj. 辅助的，补助的
adj. 可用的，手边的，可获得的
n. 斧

B

background [ˈbækgraʊnd]
 back-up (= back up)
 balance [ˈbæləns]
 bandage [ˈbændɪdʒ]
 base [beɪs]
 battery [ˈbætəri]
 bay [beɪ]
 beacon [ˈbiːkən]
 beneath [biˈniːθ]
 blend [blend]
 block [blɒk]
 blockage [ˈblɒkɪdʒ]
 bowl [bəʊl]
 bracket [ˈbrækɪt]
 brake [breɪk]

n. 背景，底色
v. / n. 备份
n. 平衡
n. 绷带
n. 底部，基地
n. 电池
n. 分隔舱
n. 信标，无线电发送器
prep. 在…之下
vt. 混合
vt. 妨碍，阻碍
n. 封锁，妨碍
n. 厕盆
n. 支架
n. 闸，刹车

bulk [bʌlk]
 bulkhead ['bʌlkhed]
 buzz [bʌz]
 bypass ['baɪpʌs; (US) 'baɪpæs]

adj. 散装的, 松散的
n. 舱壁
n. 嗡嗡声
vt. 迂回; 旁通

C

cabinet ['kæbɪnɪt]
 canopy ['kænəpi]
 capability [,keɪpə'bɪlɪti]
 catastrophic [,kætə'strɒfɪk]
 category ['kætɪgəri]
 catering ['keɪtərɪŋ]
 cautiously ['kɔːʃəsli]
 ceiling ['siːlɪŋ]
 certified ['səːtɪfaɪd]
 certify ['səːtɪfaɪ]
 character ['kærɪktə]
 characteristic [,kærɪktə'rɪstɪk]
 charter ['tʃɑːtə]
 chime [tʃaɪm]
 chute [ʃuːt]
 circular ['səːkjʊlə]
 circulation [,səːkjʊ'leɪʃən]
 claim [kleɪm]
 clockwise ['klɒkwaɪz]
 coast [kəʊst]
 cockpit ['kɒkpit]
 code [kəʊd]
 column ['kɒləm]
 combination [,kɒmbɪ'neɪʃən]
 combustible [kəm'bʌstəbl]
 commonality [,kɒmə'nælɪti]
 commuter [kə'mjuːtə]
 compatible [kəm'pætəbl]
 competitor [kəm'petɪtə]

n. (有抽屉或格子的) 橱柜
n. 天篷, 遮篷
n. (实际) 能力, 性能
adj. 悲惨的, 灾难的
n. 种类, 类别
n. 配餐
adv. 慎重地
n. 天花板, 最高限度
adj. 证明合格的, 有保证的
v. 证明 (某物是合格的)
n. 字符 (字母或数字)
n. 特性, 特征
vt. 租, 包 (机、船、车等)
n. 钟声
n. 斜道, 倾斜的通道或管道
adj. 圆形的
n. 循环, 流通
vt. 认领
adv. 顺时针方向地
n. 海岸
n. 驾驶舱
n. 代码, 编码
n. 柱, 柱形物
n. 结合, 联合, 合并
adj. 易燃的
n. 共性, 公共
n. 经常往返者
adj. 一致的
n. 竞争者

complement [ˈkɒmplɪmənt]
compose [kəmˈpəʊz]
compressor [kəmˈpresə]
comprise [kəmˈpraɪz]
condense [kənˈdens]
conference [ˈkɒnfərəns]
configuration [kənˌfɪɡjʊˈreɪʃən]
confirm [kənˈfɜːm]
connection [kəˈnekʃən]
consciousness [ˈkɒnʃənsɪs]
constant [ˈkɒnstənt]
consume [kənˈsjʊːm]
container [kənˈteɪnə]
containerize [kənˈteɪnəraɪz]
convertible [kənˈvɜːtəbl]
corresponding [ˌkɒrɪsˈpɒndɪŋ]
counterclockwise [ˌkaʊntəˈklɒkwaɪz]
cradle [ˈkreɪdl]
crystal [ˈkrɪstl]
cuff [ˈkʌf]
curve [kɜːv]
cylinder [ˈsɪlɪndə]

vt. 补充, 补足
v. 组成
n. 压缩机
v. 包含, 由...组成
v. (使) 浓缩, 精简
n. 会议
n. 布局, 构造, 结构
vt. 确定, 确认
n. 连接, 接线
n. 意识, 知觉
adj. 持续的
vt. 消耗, 消费
n. 集装箱
vt. 用集装箱装
adj. 可改变的, 可转换的
adj. 相应的
adv. 反时针方向
n. 摇篮, 支架
n. 水晶
n. 橡皮箍袖带
vt. 使弯曲, 使成曲线
n. 圆筒, 圆柱体

D

dampen [ˈdæmpən]
damper [ˈdæmpə]
data [ˈdeɪtə]
decompression [ˌdɪːkəmˈpresʃən]
dedicated [ˈdedɪkeɪtɪd]
deformity [dɪˈfɔːmɪti]
degradation [ˌdeɡrəˈdeɪʃən]
deliver [dɪˈlɪvə]
density [ˈdensɪti]
deploy [dɪˈplɔɪ]
deposit [dɪˈpɒzɪt]

v. 消除, 抑制, 压抑
n. 缓冲器, 减震器
n. datum 的复数, [计] 资料, 数据
n. 释压、失压
adj. 专用的
n. 残缺, 残疾
n. 退化, 下降到低等的状况、水平
vt. 交付
n. 密度
v. 展开
vt. 存放, 堆积

depressurize [ˌdiːˈpreʃəraɪz]

detach [di'tætʃ]

detect [di'tekt]

detector [di'tektə]

device [di'vaɪs]

dial [ˈdaɪəl]

diaper [ˈdaɪəpə]

digital [ˈdɪdʒɪtl]

dilute [daɪ'ljuːt, di'l-]

diluter [daɪ'ljuːtə, di'l-]

dim [dɪm]

disarm [dis'ɑːm, diz-]

disc [dɪsk]

discharge [dis'tʃɑːdʒ]

disconnect [ˌdɪskə'nekt]

dispatch [dis'pætʃ]

dispense [dis'pens]

disposable [dis'pəʊzəbl]

disposal [dis'pəʊzəl]

distinct [dis'tɪŋkt]

distribution [ˌdɪstri'bjuːʃən]

ditching [ˈdɪtʃɪŋ]

divider [di'vaɪdə]

dominate [ˈdɒmineɪt]

doorsill [ˈdɔːsɪl]

dot [dɒt]

drain [dreɪn]

drainage [ˈdreɪnɪdʒ]

drift [drɪft]

duration [djuə'reɪʃən]

dynamic [daɪ'næmɪk]

vt. 使减压, 使降压

vt. 分离, 分开

vt. 探测

n. 探测器

n. 装置, 设备

v. 拨 (号)

n. 尿布

adj. 数字的

v. 冲淡, 变淡, 变弱, 稀释

n. 稀释剂

adj. 暗淡的, 模糊的

v. 解除予位

n. 圆盘; 圆板

vt. 放出, 开 (炮), 放 (枪)

v. 断开, 拆开

n. 派遣

vt. 分发, 分配

adj. 使用后易处理的, 一次性的

n. 处理, 处置

adj. 清楚的, 明显的, 截然不同的

n. 分配, 分发

n. [航空] 水上迫降

n. 间隔物, 屏风

v. 占优势, 在…中占首要、支配地位

n. 门槛

n. 点, 圆点

vt. 排出

n. 排水, 排泄

n. 漂流物, 漂流

n. 持续时间

adj. 动态的, 动力的, 动力学的

E

ease [iːz]

economy [i(ː)'kɒnəmi]

n. 没有困难、艰辛或费力

n. 经济, 节约, 经济实惠

egress [ˈi:ɡres]
 elevator [ˈeliveɪtə]
 eminence [ˈeminəns]
 emission [iˈmiʃən]
 encounter [inˈkaʊntə]
 energize [ˈenədʒaɪz]
 enhance [inˈhɑ:ns]
 entertainment [ˌentəˈteinmənt]
 entryway [ˈentri,wei]
 environmental [inˌvaɪərənˈmentl]
 erect [iˈrekt]
 essential [iˈsenʃəl]
 exceed [ikˈsi:d]
 exceptional [ikˈsepʃənl]
 excess [ikˈses,ˈekses]
 excessive [ikˈsesɪv]
 exhaust [ɪɡˈzɔ:st]
 existing [ɪɡˈzɪstɪŋ]
 explode [iksˈpləʊd]
 explosion [iksˈpləʊʒən]
 expose [iksˈpəʊz]
 extension [iksˈtenʃən]
 exterior [eksˈtɪəriə]
 external [eksˈtə:nl]
 extinguish [iksˈtɪŋɡwɪʃ]

n. 出口, 外出
n. 升降舵
n. 杰出, 卓越
n. (光、热等的) 散发, 发射, 喷射
v. 遭遇, 遇到
vt. 使通电
vt. 提高, 增强
n. 娱乐
n. 入口通道
adj. 周围的, 环境的
vt. 使竖立, 使直立
adj. 基本的, 不可缺少的
vt. 超过, 超出
adj. 异常的, 例外的
n. 超过
adj. 过多的, 过量的
vi. 排气; 排出
adj. 现有的
vi. 爆炸
n. 爆炸
vt. 使暴露, 受到, 使曝光
n. 伸展, 伸长
adj. 外部的, 外在的
adj. 外部的
vt. 熄灭

F

fabric [ˈfæbrɪk]
 facility [fəˈsɪlɪti]
 fan [fæn]
 fatal [ˈfeɪtl]
 faucet [ˈfɔ:st]
 faulty [ˈfɔ:ltɪ]
 feature [ˈfi:tʃə]

n. 织品, 织物, 布
n. 设备, 工具
n. 鼓风机, 风扇
adj. 致命的, 毁灭性的
n. 水龙头
adj. 有故障的
vt. 是…的特色
n. 特征, 特点, 特色

filler ['fɪlə]
 fitting ['fɪtɪŋ]
 fixture ['fɪkstʃə]
 flammable ['flæməbl]
 flap [flæp]
 flashlight ['flæʃlaɪt]
 flat [flæt]
 flexibility [ˌfleksə'bɪləti]
 float [fləʊt]
 floatation [fləʊ'teɪʃən]
 fluorescent [fluə'resənt]
 flush [flʌʃ]
 fold [fəʊld]
 footprint ['fʊtprɪnt]
 foul [faʊl]
 frequency ['fri:kwənsi]
 friction ['frɪkʃən]
 fuel [fjuəl]
 fume [fju:m]
 functionality [ˌfʌŋkəʃə'nælɪti]
 fuse [fju:z]
 fuselage ['fju:zɪləʒ]
 fusible ['fju:zəbl]

n. 装填者, 装填物
n. 装配, 装置
n. 固定设备
adj. 易燃的, 可燃性的
n. 襟翼; 垂下作为覆盖之物, 盖
n. 手电筒
adj. 平面的, 水平的
n. 弹性, 灵活性, 机动性
vi. 浮动, 飘浮
n. 漂浮
adj. 荧光的
n. 冲洗
vt. 折叠
n. 足迹, 脚印
vt. 淤塞
n. 频率, 周率
n. 摩擦, 摩擦力
n. 燃油
n. (浓烈或难闻的) 烟, 气体
n. 功能性
n. 保险丝, 熔丝
n. [空] 机身
adj. 溶解的, 可熔的

G

garbage ['gɑ:bidʒ]
 garment ['gɑ:mənt]
 gaseous ['gæsiəs, geɪzjəs]
 gasoline ['gæsolɪn]
 gauge [geɪdʒ]
 generator ['dʒenəreɪtə]
 gravity ['grævɪti]
 grease [greɪs]
 grill [grɪl]
 grip [grɪp]

n. 垃圾, 废物
n. 衣服, 外衣
adj. 气体的, 气态的
n. 汽油
n. 量表, 计量器
n. 发电机, 发生器
n. 重力
n. 油脂
n. 格栅
n. 把手

gross [grəʊs]
ground [graʊnd]
grouping ['gru:pɪŋ]
guidance ['gaɪdəns]

handgrip ['hændgɪp]
handhold
handicap ['hændɪkæp]
handicapped ['hændɪkæpt]
handkerchief ['hæŋkətʃɪf]
handrail ['hændreɪl]
handset ['hændset]
hang [hæŋ]
hatch [hætʃ]
headphone ['hedfəʊn]
headroom ['hedru:m]
hinge [hɪndʒ]
horn [hɔ:n]
hydraulic [haɪ'drɔ:tlɪk]
hypoxia [haɪ'pɒksɪə]
Hz [hɜ:ts]

identical [aɪ'dentɪkəl]
identification [aɪ,dentɪfɪ'keɪʃən]
identifier [aɪ'dentɪfaɪə]
identify [aɪ'dentɪfaɪ]
ignition [ɪg'nɪʃən]
illuminate [ɪ'ljʊ:meɪnɪt]
illumination [ɪ,lju:mi'neɪʃən]
inadvertent [ɪnəd'vɜ:tənt]
incandescent [ɪnkæn'desnt]
incorporate [ɪn'kɔ:pəreɪt]

adj. 总的, 毛重的
n. (复数) 沉淀物, 液体底部的沉淀物
n. 分组
n. 指导, 领导

H

n. 手柄
n. 栏杆扶手
v. 妨碍; 加障碍于; 使受障碍
adj. 残疾的
n. 手帕
n. 栏杆, 扶手
n. 电话听筒, 手机, 手持机
vi. 悬着, 垂下
n. 舱口, (门、墙壁、地板上的) 开口
n. 双耳式耳机
n. 头上空间, 净空高度
n. (门、盖等的) 铰链
n. 喇叭
adj. 液压的
n. [医] 组织缺氧, 氧不足
abbr. Hertz 赫兹 (频率单位: 周/秒)

I

adj. 同一的, 同样的
n. 辨认, 识别
n. 标识符, 识别码
vt. 识别, 鉴别
n. 点火, 点燃
v. 照明, 照亮
n. 照明
adj. 不注意的, 疏忽的
adj. 白炽的
vi. 合并, 混合

independent [indi'pendənt]
 indication [ˌindi'keɪʃən]
 indicator [ˈɪndɪkeɪtə]
 infinite [ˈɪnfɪnɪt]
 inflation [ɪn'fleɪʃən]
 inhibit [ɪn'hɪbɪt]
 initiate [ɪ'nɪʃieɪt]
 innovation [ˌɪnəʊ'veɪʃən]
 insert [ɪn'sɜ:t]
 install [ɪn'stɔ:l]
 instruction [ɪn'strʌkʃən]
 insulation [ˌɪnsju'leɪʃən]
 intact [ɪn'tækt]
 integral [ˈɪntɪgrəl]
 integrate [ˈɪntɪɡreɪt]
 integrated [ˈɪntɪɡreɪtɪd]
 integrity [ɪn'tegreɪti]
 intensity [ɪn'tensɪti]
 interior [ɪn'tɪəriə]
 internal [ɪn'tə:nl]
 interphone [ˈɪntə(:)fəʊn]

jack [dʒæk]
 jetliner [ˈdʒetˌlaɪnə]
 jetway

keypad [ˈki:pæd]
 knot [nɒt]

adj. 独立的, 不受约束的
n. 指示, 迹象, 暗示; 信号
n. 指示器
adj. 无穷的, 无限的
n. 充气, 胀大
vt. 抑制, 约束
vt. 开始, 发动
n. 改革, 创新
vt. 插入, 嵌入
vt. 安装, 安置
n. 指示, 用法说明 (书)
n. 绝缘
adj. 完整无缺的, 尚未被人碰过的
adj. 完整的, 整体的
vt. 使成整体, 使一体化, 结合
adj. 综合的, 完整的
n. 完整, 完全, 完整性
n. 亮度
adj. 内部的, 内的
adj. 内在的, 内部的
n. 对讲机

J

n. 插孔, 插座
n. 喷气客机
n. 廊桥

K

n. [计] 键区
n. (绳等的) 结; 节 (船速, = 海里/小时)

lane [leɪn]
 latch [lætʃ]
 latex ['leɪteks]
 launch [lɔːntʃ, lɑːntʃ]
 lever ['liːvə, 'levə]
 lifeline ['laɪflaɪn]
 limb [lɪm]
 line [laɪn]
 linkage ['lɪŋkɪdʒ]
 liquefy ['likwɪfaɪ]
 live [laɪv]
 locator [ləʊ'keɪtə]

maintenance [ˈmeɪntɪnəns]
 malfunction [ˌmælfʌŋkʃən]
 maneuver [mə'nuːvə]
 manually [ˈmænjʊəli]
 manufacture [ˌmænju'fæktʃə]
 mast [mɑːst]
 maximum [ˈmæksɪməm]
 mechanically [mi'kænikəli]
 mechanism [ˈmekənɪzəm]
 medium [ˈmiːdjəm]
 megaphone [ˈmegəfəʊn]
 melt [melt]
 menu ['menjuː]
 microphone [ˈmaɪkrəfəʊn]
 millibar [ˈmɪlibɑː]
 minus [ˈmaɪnəs]
 miscellaneous [ˌmɪsi'leɪnjəs, -niəs]
 mixture ['mɪkstʃə]
 modulate [ˈmɒdjuleɪt]

L

n. 车道, 线道
n. 门插销
n. [植] 橡胶
vt. 发动, 发起
n. 手柄; 操作杆
n. 救生绳
n. 肢
n. 管道
n. 连接
v. (使) 液化
adj. 充电的, 带有电流或充满电能的
n. (声波) 探测器, 定位器, 定位物

M

n. 维护, 保持
n. 故障
vt. 机动 (飞行); 操纵
adv. 人工地, 手动地
vt. 制造, 加工
n. 桅, 桅杆, 柱
n. 最大量, 最大限度, 极大
adv. 机械地
n. 机械装置
adj. 中间的, 中等的
n. 扩音器, 喇叭
v. (使) 融化, (使) 熔化
n. 菜单
n. 扩音器, 麦克风
n. 毫巴
adj. 负的, 减的
adj. 各色各样混在一起的
n. 混合, 混合物
vt. 调整, 调节

module ['mɒdju:l]
monitor ['mɒnɪtə]
mooring ['muərɪŋ]

mould [məʊld]
mount [maʊnt]

multiple ['mʌltɪpl]

network ['netwɜ:k]
nitrogen ['naɪtrədʒən]
nose [nəʊz]
nozzle ['nɒzl]
numeric [nju:'merɪk]

obscure [əb'skjuə]
observe [əb'zə:v]
optimize ['ɒptɪmaɪz]
option ['ɒpʃən]
optional ['ɒpʃənəl]
originate [ə'rɪdʒɪneɪt]
outlet ['aʊtlet, -lɪt]
outsell [aʊt'sel]
oven ['ʌvən]
overheat [ˌəʊvə'hi:t]
overload [ˌəʊvə'ləʊd]
override [ˌəʊvə'raɪd]

pack [pæk]
padded ['pædɪd]

n. 单元
n. 监视器, 监控器
n. (系泊船只或飞机的) 设备 (例如锚或链)
n. [亦作 mold] 模具
vt. 装上, 设置
n. 底座
adj. 多样的, 多重的

N

n. 网络
n. [化] 氮
n. [空] 机头
n. 管口, 喷嘴
adj. 数字的

O

vt. 使暗, 使不明显
vt. 遵守, 服从
vt. 使最优化
n. 选择权, 选项
adj. 可选择的, 随意的
vt. 引起, 发起
n. 出口, 电源插座
vt. 卖得比…多
n. 烤箱, 烤炉
n. 过热
n. 超载
vt. 超控

P

n. 一群, 一副
adj. 加垫子的

paddle [ˈpædl]
 panel [ˈpænl]
 parallel [ˈpærəlel]
 partition [pɑːˈtɪʃən]
 payload [ˈpeɪləʊd]
 percentage [pəˈsentɪdʒ]
 philosophy [fɪˈləsəfi]
 pictograph [ˈpɪktəɡrɑːf]
 pin [pɪn]
 pitch [pɪtʃ]
 placard [ˈplækɑːd]

 pneumatic [nju(:)ˈmætik]
 pointer [ˈpɔɪntə]
 poisonous [ˈpɔɪznəs]
 potable [ˈpəʊtəbl]
 previously [ˈpriːviəsli]
 prior [ˈpraɪə]
 prioritize [praɪˈɔɪtaɪz, ˈpraɪəri-]
 priority [praɪˈɔɪti]
 procedure [prəˈsiːdʒə]
 professional [prəˈfeʃənl]
 property [ˈprɒpəti]
 provision [prəˈvɪʒən]
 proximity [prɒkˈsɪmɪti]
 pulley [ˈpʊli]
 pulp [pʌlp]
 pushback

n. 桨状物; 短桨
n. 面板
adj. 平行的
n. 分割, 分开, 隔离物
n. 有效载荷
n. 百分率, 百分比
n. 观点
n. 象形图
n. 销, 栓
n. 距离
n. 布告, 标牌
v. 张贴
adj. 装满(压缩)空气的
n. 指示器, 指示方向
adj. 有毒的
adj. 适于饮用的
adv. 先前, 以前
adv. 在前, 居先
vt. 把...区分优先次序
n. 优先, 优先权
n. 程序, 手续
n. 专业人员, 从事某项职业的人
n. 特性
n. 供应, (一批) 供应品
n. 接近, 亲近
n. 滑轮
n. (水果的) 果肉, 纸浆
n. (飞机) 推出

R

rare [rɛə]
 rating [ˈreɪtɪŋ]
 readily [ˈredɪli]
 rear [rɪə]
 recline [rɪˈklaɪn]

adj. 罕见的, 很少发生的
n. 类别, 分类
adv. 容易地
adj. 后面的, 背面的, 后方的
v. 放置

reference ['refrəns]
 refrigeration [riˌfrɪdʒə'reɪʃən]
 regardless [rɪ'gɑːdlɪs]
 regulator ['regjuleɪtə]
 release [rɪ'liːs]
 reliability [rɪˌlaɪə'bɪlɪti]
 relief [rɪ'liːf]
 relocate ['riːləʊ'keɪt]
 repetitive [rɪ'petɪtɪv]
 represent [ˌreprɪ'zent]
 rescue ['reskjʊː]
 reservoir ['rezəvɔː]
 reset [ˌrɪː'set]
 resistant [rɪ'zɪstənt]
 respective [rɪs'pektɪv]
 restrain [rɪs'treɪn]
 retract [rɪ'trækt]
 retractable [rɪ'træktəbl]
 retraction [rɪ'trækʃən]
 revenue ['revənjuː]
 rinse [rɪns]
 rod [rɒd]
 rotate [rəʊ'teɪt]
 rough [rʌf]
 rudder ['rʌdə]

scissors ['sɪzəz]
 seal [siːl]
 sector ['sektə]
 secure [sɪ'kjʊə]
 segment ['segmənt]
 selector [sɪ'lektə]
 self-contained ['selfkən'teɪnd]

n. 参考
n. 冷藏, 制冷, 冷却
adj. 不管, 不顾
n. 调节器, 调速器, 调整器
vt. 松开, 解开, 放开
n. 可靠性
n. 减缓
v. 重新安置
adj. 重复的, 反复性的
vt. 代表, 意指
n. 援救, 营救
n. 水库, 蓄水池
v. 复位
adj. 抵抗的, 有抵抗力的
adj. 分别的, 各自的
vt. 抑制, 制止
v. 缩回, 收回, 取消, 撤销
adj. 可收回的
n. 收回
n. 收入, 收益
n. 冲洗, 漂净
n. 杆, 棒
v. 转动
adj. 粗糙的, 粗暴的
n. 方向舵

S

n. 剪刀
n. 封铅, 封条, 密封
vt. 封, 密封
n. 部分, 部门, 地区
v. 保护, 扣紧
n. 部分
n. 选择器
adj. 设备齐全的, 独立的

sensitive [ˈsensitiv]	adj. 敏感的, 灵敏的
sensor [ˈsensə]	n. 传感器
serviceability [ˌsɜːvisəˈbiliti]	n. 有用性, 适用性
severe [siˈviəl]	adj. 剧烈的, 严重的
shock [ʃɒk]	n. 休克
similarity [ˌsimiˈlærɪti]	n. 相似, 相似点
simultaneously [siməlˈteiniəsli]	adv. 同时地
sink [siŋk]	n. 水槽, 水池
slat [slæt]	n. 缝翼
slide [slaid]	n. 滑, 滑动
slippery [ˈslipəri]	adj. 滑的, 光滑的
slot [slɒt]	n. 缝, 细长的孔
smolder [ˈsməʊldə]	vi. 闷烧
soak [səʊk]	v. 浸, 泡, 浸透
solution [səˈljʊːʃən]	n. 溶液
source [sɔːs]	n. 来源, 发起者
spacious [ˈspeɪʃəs]	adj. 宽阔的, 宽敞的
specification [ˌspesɪfiˈkeɪʃən]	n. 详述, 规格
splint [splɪnt]	n. (外科用的) 夹板
spoiler [spɔɪlə]	n. 扰流板
spring-assisted	adj. 弹簧助力的
stabilizer [ˈsteɪbalaɪzə]	n. 水平尾翼
standard [ˈstændəd]	n. 标准, 规格
standby [ˈstændbaɪ]	n. 备用
state-of-the-art	adj. (学科, 技术等的) 当前水平, 最新水平
status [ˈsteɪtəs]	n. 情形, 状况
steep [stiːp]	adj. 陡的, 大幅度倾斜的
stethoscope [ˈsteθəskəʊp]	n. 听诊器
stick [stɪk]	v. 卡住, 塞住
stowage [ˈstəʊɪdʒ]	n. 存储
strap [stræp]	n. 窄带, 皮带
strength [streŋθ]	n. 长处, 优点
stretcher [ˈstretʃə]	n. 担架
strip [striːp]	n. 条, 带
structural [ˈstrʌktʃərəl]	adj. 结构的, 建筑的

subsonic [ˈsʌbˈsɒnik]
 sufficient [səˈfɪʃənt]
 suit [sjuːt]
 sunshade [ˈsʌnʃeɪd]
 survival [səˈvaɪvəl]
 survivor [səˈvaɪvə]
 suspicious [səsˈpɪʃəs]
 swab [swɒb]
 swing [swɪŋ]
 switch [swɪtʃ]

adj. [物] 亚音速的
adj. 充分的, 足够的
v. 适合, 适宜于
n. 遮阳板
n. 生存, 幸存
n. 生还者
adj. 可疑的, 怀疑的
n. 药签
v. 旋转
n. 开关, 电闸, 转换

T

threshold [ˈθreʃhəʊld]
 thrust [θrʌst]
 tip [tɪp]
 toilet [ˈtɔɪlɪt]
 transition [trænˈzɪʒən, -ˈsɪʃən]
 transmitter [trænzˈmɪtə]
 transport [trænsˈpɔːt]
 transportation [ˌtrænsˈpɔːtɪˈʃən]
 traumatic [trɔːˈmætɪk]
 tray [treɪ]
 tread [tred]
 tremendous [triˈmendəs]
 tri-cycle [ˈtraɪsɪkl]
 trigger [ˈtrɪɡə]
 triple [ˈtrɪpl]
 tube [ˈtjuːb]
 turbofan [ˈtɜːbəʊˌfæn]
 turbulence [ˈtɜːbjələns]
 turnaround [ˈtɜːnəˌraʊnd]

n. 门槛, 入口
n. 推力
n. 顶, 尖端
n. 厕所, 洗手间; 抽水马桶
n. 转变, 转换
n. 发报机, 发射机
vt. 传送, 运输
n. 运输, 运送
adj. 外伤的, 创伤的
n. 盘, 碟, 盘子
n. 梯级, 踏板
adj. 极大的, 巨大的
n. 三轮
n. 起动装置; 触发器
adj. 三倍的
n. 管, 管子
n. 扇涡轮
n. 颠簸, 湍流
n. 周转; 转变, 转向

U

undercarriage [ˈʌndəˌkæərɪdʒ]

n. (飞机的) 起落架

undetected [ˈʌndɪ'tektɪd]
 unique [juː'nɪk]
 unmatched [ˈʌn'mætʃt]
 unoccupied [ˈʌn'ɔkjupaɪd]
 update [ʌp'deɪt]
 urgency [ˈɜːdʒənsɪ]

vacant [ˈveɪkənt]
 vacuum [ˈvækjuəm]
 valve [vælv]
 vanity [ˈvænɪti]
 vapor [ˈveɪpə]
 vaporize [ˈveɪpəraɪz]
 variant [ˈvɛəriənt]
 vary [ˈvɛəri]
 vendor [ˈvendɔː]
 vent [vent]
 ventilation [ˌventɪ'leɪʃən]
 verify [ˈverɪfaɪ]
 via [ˈvaɪə, vɪə]
 vicinity [vɪ'sɪnɪti]
 visual [ˈvɪʒjuəl]

waterproof [ˈwɔːtəpruːf]
 windscreen [ˈwɪndskriːn]
 winglet
 wingspan [ˈwɪŋspæn]
 wire [ˈwaɪə]
 wording [ˈwɔːdɪŋ]

adj. 未被发现的
adj. 唯一的, 独特的
adj. 无比的, 无匹敌的, 不相配的
adj. 空闲的, 无人占领的
v. 更新
n. 紧急, 紧急的事

V

adj. 空的, 空闲的, 空缺的
n. 真空, 真空吸尘器
n. 阀门, 活门
n. 浴室里的壁橱
n. 水汽, 水蒸气
v. (使) 蒸发
n. 变量
vi. 变化, 不同
n. 卖主
n. 通风孔, 出烟孔, 出口
n. 通风, 流通空气
vt. 检验, 校验, 查证, 核实
prep. 经, 通过, 经由
n. 邻近, 附近, 接近
adj. 看的, 视觉的

W

adj. 防水的, 不透水的
n. 风挡玻璃
n. 小翼
n. [空] 翼展
n. 金属丝, 电线
n. 用语, 措辞

Appendix 3 Emergency Equipment Symbols



NOTE: Some symbols do not apply to all configurations.

Appendix 4 Highlights of Boeing Commercial Aircraft

Years	Highlights
1917	Boeing changed the name of Pacific Aero Products to the Boeing Airplane Company.
1919	The B-1 mail plane, the first Boeing-designed commercial aircraft, made its first flight.
1955	Pan American World Airways ordered 20 Model 707 jet transports.
1957	The first production Model 707-120 jet rolled out at Renton.
1962	The first production 727-100 rolled out.
1966	Boeing announced it would build a 490-passenger 747 sport.
1967	The Model 737 made its first flight.
1968	The first 747-100 was rolled out during ceremonies at the new assembly facility in Everett.
1969	The 747-100 made its first flight.
1970	The 747 made its first commercial flight from New York to London for Pan American.
1978	Production of the 767 began. Production of the 757 began.
1980	The 500th 747 rolled out at Everett.
1981	The 767-200 made its first flight.
1982	The 757-200 made its first flight.
1988	Dual ceremonies celebrated the simultaneous rollout of the 737-400 and the 747-400. The first 767-300ER (extended range) was delivered to American Airlines.
1990	The 6 000th Boeing jetliner, a 767, was delivered to Britannia Airways. The formal go-ahead was given for the 777 jet transport with an initial order of 34 airplanes and 34 options by United Airlines.
1991	The 1 010th 707 rolled out of the Renton plant, ending a 35-year-old production line.
1993	The 747-400 freighter rolled out.
1994	The 777 twinjet, the latest member of the Boeing jet family, rolled out.
1995	Scandinavian Airline System (SAS) launched the 737-600 with an order for 35 of the aircraft. The first 777 was delivered to United Airlines. The 767 Freighter made its first flight. Board of directors authorized production of 777-300.

续表

Years	Highlights
1997	<p>Boeing offered 767-400ERX for sale to world's airlines.</p> <p>The first Next-Generation 737, a 737-700, made its first flight.</p> <p>A 777-200 set a record for flying around the world, eastbound, in 41 hours and 59 minutes.</p> <p>The Boeing Company merged with McDonnell Douglas Corp.</p> <p>Alaska Airlines became the launch customer for the 737-900, ordering 10 and taking options for 10 more.</p>
1998	<p>The 777-300 earned FAA type certification.</p> <p>The first 717-200 rolled out at the Douglas Products Division plant in Long Beach, California.</p>
1999	<p>The 737-600 made its first flight.</p> <p>The 757-300 made its first flight.</p> <p>The 767-400ER, the first new jetliner scheduled for airline delivery in the 21st century, rolled out of the Boeing factory in Everett, Wash.</p> <p>The last Classic 737 was rolled off the Renton assembly line, ending a production run of 1 988 airplanes.</p> <p>Boeing delivered the last MD-80 built to Chinese Taiwan.</p>
2000	<p>The first two 717-200 airliners for Bavaria International Aircraft Leasing Company were presented to Olympic Aviation.</p> <p>The first 737-900 rolled out.</p>
2001	<p>The 757 Special Freighter made its first flight.</p> <p>The first 737-900 was delivered to launch customer Alaska Airlines.</p> <p>Boeing delivered China Southwest Airlines' first 737-600.</p>
2002	<p>Ryanair placed an order for 100 Boeing Next-Generation 737-800 airplanes.</p> <p>Boeing delivered the 1 000th 757.</p> <p>The first Project Wedgetail aircraft, a Next-Generation 737-700, rolled off the factory line during a ceremony in Renton, Wash.</p>
2003	<p>Boeing 777-300ER, the latest 777 airplane, completed its first flight.</p> <p>Boeing Next-Generation 737 fleet reached 10 million flight hours in record time.</p> <p>Boeing offered new 747-400 freighter conversion program.</p> <p>Boeing completed production of 757.</p> <p>New Boeing 777-300ER bristled with technology.</p> <p>Boeing 7E7 Dreamliner was approved for offer to airlines.</p> <p>First Boeing Next-Generation 737 dressed up in Star Alliance fashion.</p> <p>Boeing 777-300ER completed extended operations flight testing.</p>

续表

Years	Highlights
2004	<p>Boeing 747, the "Queen of the Skies", celebrated the 35th anniversary.</p> <p>Boeing launched 7E7 Dreamliner.</p> <p>Boeing delivered the last 757-300 to Continental Airlines.</p> <p>Boeing marked completion of its 757 commercial airplane program.</p> <p>Boeing rolled out 500th market-leading 777.</p>
2005	<p>Boeing unveiled 777-200LR Worldliner — the longest range commercial jetliner.</p> <p>Boeing launched new 777 freighter.</p> <p>First 747-400 Boeing converted freighter took flight.</p> <p>Boeing launched new 747-8 Family.</p>
2006	<p>Boeing delivered its final 717s and concluded commercial production in California.</p> <p>Boeing delivered the 2 000th Next-Generation 737.</p> <p>Boeing 737 design enhancements earned FAA certification.</p> <p>Boeing Next-Generation 737-900ER took flight.</p> <p>Boeing completed firm configuration of 747-8 freighter.</p> <p>Boeing began assembling the first Next-Generation 737-700ER.</p> <p>Boeing delivered the 600th 777.</p>
2007	<p>First Boeing Next-Generation 737-700ER rolled out of factory.</p> <p>Boeing Next-Generation 737-900ER received FAA certification.</p> <p>Final assembly began on first Boeing 787 Dreamliner.</p> <p>Boeing completed 747-8 intercontinental firm configuration.</p> <p>Boeing marked the 50th anniversary of 707 first flight.</p>
2008	<p>Boeing delivered the 1 400th 747.</p> <p>Boeing delivered the 700th 777.</p> <p>First 767-300 Boeing converted freighter took flight.</p> <p>Boeing 777 freighter made the first flight.</p> <p>Boeing Next-Generation 737 carbon brakes earned FAA certification.</p> <p>Boeing completed 787 Dreamliner "High Blow" test.</p> <p>Boeing completed destructive testing on 787 Dreamliner wing box.</p>
2009	<p>Boeing celebrated 70 years in St. Louis.</p> <p>Side-of-Body installations completed on the first Boeing 787 Dreamliner.</p> <p>First Boeing 747-8 freighter left the paint hangar.</p> <p>B787 Dreamliner completed its first flight.</p>
2010	<p>Boeing 747-8 freighter successfully completed the first flight.</p> <p>Final Boeing 747 Dreamlifter entered service.</p> <p>B787 Dreamliner first flight succeeded.</p> <p>Boeing delivered its 900th 777 airplane to Ethiopian Airlines.</p> <p>B747-8 had the first successful flight.</p>

Appendix 5 Boeing and China

Years	Highlights
1930	Boeing began selling airplanes to China through a company subsidiary based in Shanghai.
1972	President Nixon arrived in Peking for an 8-day visit to China. China ordered ten Boeing 707 jetliners.
1973	China's first Boeing jetliner was delivered — the first one of ten 707s ordered by China.
1978	China ordered three Boeing 747s to expand its network of international routes.
1980	Boeing established an office in Beijing.
1983	The first two MD-82s were delivered from Long Beach to China.
1985	China accepted delivery of its first B767 aircraft.
1987	The first MD-82 assembled in Shanghai made its first flight.
1990	China placed one of the largest commercial aircraft orders in Boeing history; 36 airplanes and 36 options resulting in a purchase totaling USD 9 billion.
1991	First MD-11 was delivered to China.
1992	China took delivery of its 100th Boeing airplane.
1994	China took delivery of its 200th Boeing airplane.
1995	China Southern became first Chinese carrier to operate a Boeing 777.
1996	The first MD-90 was delivered to China from Long Beach.
1997	China ordered 50 Boeing airplanes at total value of USD 3 billion. The models ordered included 777-200, 757-200, 737-300 and 737-700/-800s, 747-400.
1998	United States President William Clinton visited China. During his visit, China converted 20 options to firm orders and signed purchase agreement for 10 options for the Boeing 737 Next-Generation airplanes. China took delivery of its 300th Boeing airplane.
1999	First MD-90 built in China was completed.
2001	The Boeing Company established its Chinese website www.boeingchina.com . Boeing delivered China Southwest Airlines' first 737-600, making it the first operator of the airplane in China. China Aviation Suppliers Import & Export Corp. ordered 30 Boeing 737s.

续表

Years	Highlights
2002	<p>Hainan Airlines received its first 737-800 with winglets, making it the first operator in China as well as in Asia.</p> <p>China Eastern received its first purchased 737-700.</p> <p>First 737-800 joined China Southern's fleet.</p> <p>China Southern took delivery of the first of two 747 freighters, becoming China's first operator of the airplane type.</p>
2003	<p>Boeing China Inc. granted Civil Aviation University of China (CAUC) access to the Boeing business-to-business web portal MyBoeingFleet.com.</p> <p>Air China's first Boeing 737-700 took off for home.</p> <p>Shanghai Airlines ordered five Boeing 757-200.</p> <p>China Aviation Supply Company finalized its agreement to purchase 30 Next-Generation 737 airplanes.</p>
2004	<p>Air China Cargo ordered two Boeing 747-400 Freighters.</p> <p>Air China ordered seven new Next-Generation 737-700 jetliners.</p>
2005	<p>China packed 120 orders of Boeing aircraft.</p> <p>Okay Airways became China's first Boeing 737-900 operator.</p> <p>Shenzhen Airlines celebrated delivery of Airline's first 737-900.</p> <p>Boeing delivered China Eastern's first 737-700s with high-altitude package.</p> <p>Boeing delivered first specially-painted 2008 Beijing Olympics airplane to Air China.</p> <p>Boeing delivered the first 747-400F to Air China Cargo.</p>
2006	<p>Boeing delivered Xia'men Airlines its first Next-Generation 737-800.</p> <p>Boeing delivered the first 747-400ERF to China Cargo Airlines.</p> <p>Chinese carriers finalized orders for Next-Generation 737s.</p> <p>Boeing delivered Air China its 150th Boeing airplane.</p>
2007	<p>Boeing delivered Next-Generation 737 to China United Airlines.</p> <p>Xia'men Airlines identified 25 Next-Generation 737 Order.</p> <p>China Southern Airlines announced order for 55 Next-Generation 737s.</p> <p>Boeing delivered Okay Airways' first 737-800 on lease from AWAS.</p>
2008	<p>Air China announced agreements for Boeing 777s and 737s.</p> <p>Air China Cargo ordered 747-400 Boeing converted freighters.</p>
2009	<p>First Boeing 777 Freighter joined China Southern.</p> <p>Boeing delivered the 800th B737 to China.</p>
2010	<p>Air China finalized order for 20 Next-Generation 737-800s.</p> <p>Air China announced order for Boeing 777s.</p>

Up to June 2010, the number of Boeing fleet in China is 837. Among them, there are 697 B737s, 43 B747s, 53 B757s, 18 B767s and 26 B777s. They are respectively operated by China National Aviation Holding Company, China Eastern, China Southern, Hainan Airlines, Shenzhen Airlines and etc.

Appendix 6 Highlights of Airbus Commercial Aircraft

Years	Highlights
1969	An agreement was officially signed launching the A300 program.
1970	Airbus Industries was officially created as a GIE. Air France signed a letter of intent to buy six A300s, the first order won by Airbus.
1971	Air France ordered the very first A300s.
1972	The first flight of the A300 took place in Toulouse.
1974	The headquarters were moved to Toulouse. The A300 received type certification. The A300 became the world's first twin-engine wide-body jet, entering airline service.
1975	The A300B4 entered airline service.
1977	The A300B4 became the first "ETOPS compliant" aircraft.
1978	The A310 was officially launched.
1980	The A300-600 series were launched.
1981	The A310 performed first flight with FFCC (Forward Facing Crew Cockpit).
1983	The A310-200, the first Airbus aircraft with EFIS (Electronic Flight Instrumental System) received certification. The A300-600 took its first flight.
1984	The A320 program was officially launched.
1985	The A310-300 entered airline service.
1987	The A320, the first airline with full digital, computer-driven, fly-by-wire controls and sidestick controllers, took its first flight. Airbus launched its long-range family of aircraft A330/A340. The A300-600R took its first flight.
1988	The A320 received certification. The first A320 was delivered.

续表

Years	Highlights
1989	The A321 program was officially launched.
1991	Airbus celebrated the first flight of long-range A340-300.
1992	The A330 took its first flight. The A340 received certification.
1993	The 1 000th aircraft was delivered to Air France, an A340-300. The first A340 was delivered. The A321 performed first flight. The A319 program was officially launched. The A330 received certification. The first A330 was delivered. The A321 received certification.
1994	The first A321 was delivered. The A300-600ST (Super Transporter) performed first flight.
1995	The A319 performed first flight. The A300-600ST received certification. The A330-200 program was launched.
1996	The A300-600ST entered airline service. The A319 received certification. The first A319 was delivered.
1997	The A340-500/-600 program was officially launched. The A319 Corporate Jet was launched. Airbus passed the milestone of 2 500 firm orders for its aircraft family.
1999	Airbus delivered its 2 000th aircraft to Lufthansa. The A318 program was launched.
2000	The A380, the world's first double-decker passenger aircraft, was launched.
2001	Airbus formally became a single integrated company, Airbus SAS. The A340-600 took its first flight.
2002	The A380 entered production. The first A380 technical manual was released. Ultra-long range A340-500 took off on maiden flight. The A318 was cleared for its maiden take-off. Airbus fleet grew with delivery of its first A319.

续表

Years	Highlights
2003	<p>The A318 was certificated today by the European Joint Aviation Authorities (JAA).</p> <p>The first A319 was delivered to Aeroflot, the Russian flag carrier.</p> <p>First Airbus A310 to be used for in-flight refueling made its debut.</p>
2005	<p>The A380 completed a successful first flight of 3 hours and 54 minutes.</p> <p>Airbus delivered its 4 000th aircraft to Lufthansa.</p>
2006	<p>The 3 000th A320 Family aircraft was manufactured.</p> <p>EADS became the sole owner of Airbus.</p>
2007	<p>The last A300 made its maiden flight.</p> <p>The A380 headed to Asia/Pacific destinations on its latest World Tour 2007 segment.</p> <p>From Singapore to Dubai; the latest A380 test campaign was completed.</p>
2008	<p>First A380 commercial flight landed at Tokyo's Narita Airport.</p> <p>A royal celebration was held for A400M military air lifter's rollout.</p> <p>A380 completed 1 000th commercial flight with Singapore Airlines.</p> <p>The first Airbus Final Assembly Line outside Europe was inaugurated in Tianjin, China.</p>
2009	<p>The A330/A340 Family looked to the future after its 1 000th delivery milestone.</p> <p>The 4 000th aircraft of the A320 Family was delivered.</p> <p>The A380 embarked on two new global demonstration tours.</p> <p>Air France started transatlantic A380 operations between Europe and the U. S.</p>
2010	<p>New engine options were offered for the A320 Family.</p> <p>Airbus delivered its 6 000th aircraft.</p>

Appendix 7 Airbus and China

Years	Highlights
1985	China Eastern Airlines received its first purchased A310 and became the first customer in China mainland of Airbus Industry.
1989	China Eastern Airlines took delivery of its first A300-600.
1994	Airbus China was founded.
1995	Sichuan Airlines became the first Chinese airline to operate the A320.
1996	The China Aviation Supplies Import & Export Corporation signed a contract of 15 billion dollars with Airbus, ordering 30 A320. China Eastern Airlines accepted delivery of its first A340.
1997	The Airbus Customer Services Training & Support Center (CASC) was founded. It was the first and most modern combined training and customer support facility in China. Air China took delivery of three long-haul A340 aircraft.
2000	First A319 joined China Eastern Airlines' fleet.
2003	China Southern Airlines accepted its first A319. Air China accepted its first A319. China Eastern Airlines became the first operator of A340-300 in China mainland, which was the longest aircraft in the world.
2005	China Southern Airlines placed a firm order of 5 A380. China Southern Airlines accepted its first A330-200. A320 joined Shenzhen Airlines for the first time.
2006	Lucky Airlines became another new customer of Airbus. First A330-300 joined China Eastern. Shanghai Airlines ordered 5 A321. China Southern had its 100th Airbus aircraft.

续表

Years	Highlights
2007	China Southern ordered 10 A330-200. A contract was signed to set up Airbus Final Assembly Line China (FALC), a joint venture between Airbus and a Chinese consortium comprising Tianjin Free Trade Zone (TJFTZ) and China Aviation Industry Corporation (AVIC). A330-300 joined Hainan Airlines for the first time.
2008	Airbus Final Assembly Line China (FALC) started operation.
2009	First A320 assembled in China performed maiden flight. The first A320 assembled by the FALC was delivered to Sichuan Airlines. A380 won type certification by CAAC.
2010	Airbus opened new supplier village extension in Beijing.

Up to November 2010, there are altogether 643 Airbus aircraft flying in China Mainland, taking more than 44% of China civil aviation market share while only 9% in 1995. The three major airlines compose of more than 71% of the total, and the other smaller airlines cover about 39%. China Eastern, the first customer of Airbus in China, operates 170 Airbus aircraft; Air China owns 101; China Southern, the first customer to order A380 in China and also the biggest customer of Airbus in China, operates 183. Sichuan Airlines 49, Shenzhen Airlines 41, Hainan Airlines 43, Spring Airlines 21, Lucky Air 17, and the others have only 16 Airbus aircraft in total.