

新世纪高职高专专业英语规划教材



航空维修职业英语

Aviation Maintenance Occupational English

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前言

2010 年教育部颁布的《高职高专教育英语课程教学基本要求》中提到：坚持“以就业为导向”，将行业英语引入公共英语教学中，全面提高学生的综合英语应用能力，重点培养学生在职场环境中的听说能力以及跨文化交际能力和职业能力，为学生平稳过渡到专业英语学习创造条件，同时也为学生今后的职场发展打下良好的基础。在此环境下，各类行业英语教材应运而生。

本书是编者在对用人单位、毕业生、在校生的专业教师进行广泛调研的基础上，结合民用航空维修行业语言环境特点编写而成的，是专门针对高职高专航空维修专业学生的英语教材，同时，也可供国内航空维修公司英语培训使用，或供希望了解该行业知识的英语爱好者学习参考。

全书所选主题均根据学生求职需要、真实职场环境、专业特点而设置，主要包括以下八个方面的内容：航空维修的安全与要求、飞机的主要结构、飞机发动机的主要组成部分与工作原理、飞机导航仪表的名称与工作原理、飞机燃油系统的了解与认识、航空维修需遵守的规章制度、国内知名航空维修公司的介绍、航空维修人员的必备资历。上述选材涵盖了航空维修的必备内容，以满足学生在掌握航空维修常用英语词汇的同时，提高学生阅读航空维修相关英文文献的能力，使其更多地了解航空维修的相关知识，从而对该行业有更全面的了解。

本书每单元由三个部分组成。

Section I Passages: 该部分由 Text A 和 Text B 两篇文章组成。其中 Text A 为精读课文，要求学生掌握课文中呈现的通用的行业英语词汇，以及相关的行业英语知识。Text B 为与 Text A 题材相同的文章，由教师根据学生的英语水平在课堂上精讲、泛讲或让学生自学。每篇课文后均根据难易程度设置了习题，帮助学生巩固和深化所学知识。

Section II Dialogues: 该部分设有与本单元主题相关的两个情景对话 (Dialogue A 和 Dialogue B)，并提供了参考句型 (Useful Expressions)。要求学生掌握在该工作环境下的常用英语词汇、短句，并能熟练运用所学知识完成交给的任务 (Tasks)。与其他教材所不同的是，该书将“说”的部分置于阅读课文之后，目的在于使学生熟悉该工作环境，并掌握与其相关的知识后，再学习该环境下的语言交流。

Section III Grammar or Structure Study: 该部分列出了航空维修英文手册和相关英文文献中常见的语法和结构，并选取了与专业相关的例句进行讲解，既方便学生掌握语

法结构，还可增加词汇量，提高阅读能力。

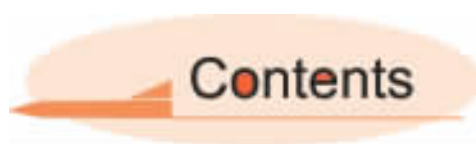
本书还提供了“航空维修常用词汇”和“航空维修常见缩略语”两个附录，方便学生在学习过程中查阅。如需索取本书的习题参考答案和课文参考译文，可联系qq: 405982177。

本书参编人员均为一线英语教师，部分作者是长沙航空职业技术学院民航CCAR147 培训机构的英语教员，他们具有丰富的基础英语和机务英语教学经验。主审由长沙航空职业技术学院雷世平教授担任。此外，编写过程中还得到了该学院航空装备维修工程二级学院的陈律副院长以及飞机维修教研室文韬主任的专业指导，得到了北京飞机维修工程有限公司、厦门太古发动机服务有限公司、上海科技宇航有限公司、广州飞机维修工程有限公司人事部门、英语培训部门的大力支持与帮助，并参考了其部分培训资料，在此深表感谢！

由于时间有限，编者能力有限，缺点和不足在所难免，恳请广大师生朋友批评指正，以期在以后的修订中使之更加完善。

编 者

2014 年 7 月



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Unit 1 Safety and Requirements



Section I Passages

Comprehensive Reading

Warm-up Discussion

1. What do you think is the most important when doing aviation maintenance?
2. How do you think we can ensure aircrafts and workers' safety?

Text A Aircraft Maintenance Safety

Aircraft maintenance work includes inspection and repair of aircraft structures, coatings, and systems in hangars and on the air field. Good training and work practices ensure aircrafts and workers' safety.

Tall, heavy aircrafts make it hard to see people on the ground when maneuvering in the hangar or maintenance area. Watch and communicate with the aircraft operator to avoid caught/crush accidents (getting run over by a tire or colliding with a wing or tail). Never enter the ramp or flight line without permission from the air field controller.

Work at a steady pace. Rushing your work increases aircraft turnaround and accidents. To avoid a fall, watch for ground lines to the aircraft. Well-lit work areas are safer. Watch sharp leading edges like wing tips and pointy antennas, probes, and "Remove Before Flight" flags that stick out from the aircraft. Colliding with hard, sharp surfaces or protrusions causes bumps, bruises, and cuts.

Stay inside painted hazard lines and keep clear of aircraft "prop arcs". Contact with a propeller, rotor, or exposed rotating part can cause severe injuries. Keep hair tied

back and avoid loose clothing and jewelry to prevent entanglement with moving parts. Don't lean on or place your hands or feet near engine intake areas. Keep tools away and pick up debris near the engine. If an engine starts, you could be severely injured, or small items could be turned into projectiles.

Tall aircraft require ladders, platforms, and scaffolds to reach work areas. Follow ladder safety guidelines. Use a fall protection harness where required. You may need to work in cramped quarters while performing aircraft maintenance. Evaluate aircraft access areas and job tasks with limited egress and follow confined space procedures if needed.



Aircraft chemicals include lubricants, fuels, coating strippers, paints, and solvents. These can be concentrated and contain hazardous materials; use material safety data sheets (MSDS). MSDS explain how to handle chemicals, proper storage and disposal, and the required personal protective equipment (PPE) for safe work. Do not smoke around aircraft maintenance areas where chemicals and fuels are flammable.



Fabrication and repair work requires tools such as welding torches, drills, rivets, or grinders. Properly maintain your tools and follow safety procedures. When moving

large, bulky aircraft parts and materials, use assistive devices or get help to make the lift safe. Use good ergonomic practices such as frequent 30-second micro-breaks and job task rotation to prevent fatigue and injury.

PPE varies with the job task. Bump caps protect you from an accidental collision with an aircraft part. Hard hats protect you from falling objects. Safety glasses, a face shield, and goggles protect your face and eyes, depending on the tasks and materials. Coveralls and rubber gloves and boots protect your hands and feet from chemicals. Sturdy work gloves protect your hands from cuts and scrapes while steel-toe work boots with non-slip soles protect your toes and decrease the chance of falls. Wear adequate hearing protection (ear plugs, muffs, etc.) to protect you from aircraft noise. A respirator may be needed to control dusts from grinding and sanding operations.

The above evaluations and/or recommendations are for general guidance only and should not be relied upon for legal compliance purposes. They are based solely on the information provided to us and relate only to those conditions specifically discussed. We do not make any warranty, expressed or implied, that your workplace is safe or healthful or that it complies with all laws, regulations or standards.

Notes

1. Watch sharp leading edges like wing tips and pointy antennas, probes, and “Remove Before Flight” flags that stick out from the aircraft. Colliding with hard, sharp surfaces or protrusions causes bumps, bruises, and cuts.

要留意像翼尖的锋利前缘、尖尖的天线、探针，以及从机身伸出来的标有“起飞前移除”的红条。与硬、尖的表面或突出物相碰撞会导致起肿块、擦伤、划伤。

2. Stay inside painted hazard lines and keep clear of aircraft “prop arcs”. Contact with a propeller, rotor, or exposed rotating part can cause severe injuries.

请勿超出油漆的危险线或靠近飞机“螺旋桨弧线”。靠近螺旋桨、旋翼或裸露在外的旋转部件都可能导致非常严重的伤害。

3. Aircraft chemicals include lubricants, fuels, coating strippers, paints, and solvents. These can be concentrated and contain hazardous materials; use material safety data sheets (MSDS).

飞机化学物质包括润滑、燃料、涂层剂、涂料、溶剂。这些东西是浓缩的，可能含有有害物质，要使用化学品安全数据说明书。

4. Use good ergonomic practices such as frequent 30-second micro-breaks and job task rotation to prevent fatigue and injury.

采用良好的符合人体工程学的做法，比如：在工作任务与 30 秒的短时休息之间频繁替换，以防疲劳和受伤。

5. We do not make any warranty, expressed or implied, that your workplace is safe or healthful or that it complies with all laws, regulations or standards.

对于你的工作环境是否安全，是否有益于健康，是否要遵从所有的法律、法规以及标准，我们不做任何的担保、明示或暗示。

Words

coating *n.* 涂层

maneuver *v.* 机动；活动

crush *vt.* 压碎，(使)变形

collide *vi.* 碰撞，抵触

ramp *n.* 停机坪，坡道

steady *adj.* 稳定的，坚定的

pace *n.* (一)步，步法，步态

turnaround *n.* 停航时间，调头

pointy *adj.* 非常尖的

antenna *n.* 天线

probe *n.* 探针，探测器 *vt.* (以探针等)探查，查明

protrusion *n.* 伸出，突出

bump *n.* 撞击，肿块

bruise *n.* 瘀伤，擦伤

hazard *n.* 冒险，危险

prop *n.* 螺旋桨 *vt.* 支撑，维持

arc *n.* 弧，弓形

propeller *n.* 推进物，螺旋桨

rotor *n.* [机] 转子，回转轴，转动体

expose *v.* 使暴露，使曝光

rotate *v.* (使)旋转

severe *adj.* 严厉的，剧烈的，严峻的

entanglement *n.* 纠缠

debris *n.* 碎片

projectile *n.* 抛射物

ladder *n.* 梯子，阶梯

platform *n.* (车站) 月台，平台

scaffold *n.* 脚手架

cramped *adj.* 受限制的；狭窄的

quarter *n.* 地区

egress *n.* 出口

confine *v.* 限制

lubricant *n.* 润滑油

stripper *n.* 除漆剂，清除剂

solvent *n.* 溶剂

concentrate *v.* 集中

disposal *n.* 处理

flammable *adj.* 易燃的，可燃性的

fabrication *n.* 制作，装配

weld *v.* 焊接

torch *n.* 火把，火炬，照明物

drill *n.* 电钻

rivet *n.* 铆钉

bulky *adj.* 大的, 容量大的, 体积大的
device *n.* 装置

ergonomic *adj.* 人类工程学的

fatigue *n.* 疲劳

shield *n.* 防护物, 盾, 盾状物

goggle *n.* (复数) 风镜, 护目镜

coverall *n.* [常用复数] 连衣裤工作服

sturdy *adj.* 强健的, 身体健壮的, 结实的; 坚固的, 耐用的

scrape *n.* 刮, 擦, 擦痕 *v.* 刮掉, 擦掉

plug *n.* 塞子, 堵塞物

muff *n.* 耳罩

respirator *n.* 口罩, 呼吸保护器

imply *v.* 暗示, 意味

Phrases

air field 飞机场

work practice 工作操作规程

aircraft operator 机务人员

get run over 辗过

flight line 机场维护工作区: 机场的一块区域, 尤指用于飞机装货、卸货和修理的停放区域和维修库

groundline 地面基准线

leading edge 前缘

stick out 伸出

painted hazard line 划定的危险区域

keep clear of 不接触

engine intake area 发动机进气区

protection harness 保护装备

cramped quarter 限定的工作区域

limited egress 固定的出口

confined space procedure 固定空间制度

coating stripper 涂层剂

welding torch 焊枪

ergonomic practice 符合人体工程学的做法

bump cap 防护帽

hard hat 安全帽

face shield 面罩

rubber glove and boots 橡胶手套和靴子

work gloves 工作手套

steel-toe work boots 钢头工作靴

non-slip soles 防滑鞋底

hearing protection 听力保护设备

ear plugs 耳塞

Abbreviations

MSDS material safety data sheets 化学品安全数据说明书

PPE personal protective equipment 个人防护设备

Exercises

1. Answer the following questions.

(1) What does aircraft maintenance work include?

(2) Why should aircraft maintenance workers work at a steady pace?

(3) How to prevent entanglement with moving parts?

(4) What do aircraft chemicals include?

(5) What does it mean by saying “PPE varies with the job task”?

2. Please fill in the blanks with the proper form of the words given.

permit, accident, collision, dispose, rotate, protection, guide, recommendation, relate, comply

(1) What can women do to _____ themselves from heart disease?

(2) His illness would not _____ that he (should) work hard.

(3) It is difficult to _____ his argument to the facts.

(4) This restaurant has nothing to _____ except that it's cheap.

(5) The safe _____ of nuclear waste is a major problem.

(6) The baby is not willing to _____ with her mamma's words.

(7) Under his father's _____, he learned how to swim.

(8) Stay well away from the helicopter when its blades start to _____.

(9) If the aims of two countries _____, there may be war.

(10) She was involved in a serious car _____ last week.

3. Please match Column A with the corresponding expressions in Column B.

A

(1) PPE

(2) an accidental collision with an aircraft part

B

(1) 材料安全数据表

(2) 含有有害物质

- | | |
|---------------------------------|----------------|
| (3) MSDS | (3) 遵从所有的法律 |
| (4) painted hazard line | (4) 个人防护装备 |
| (5) comply with all laws | (5) 划定的危险区域 |
| (6) contain hazardous materials | (6) 与飞机零件的意外碰撞 |

4. Translate the following sentences into Chinese.

(1) Never enter the ramp or flight line without permission from the air field controller.

(2) Colliding with hard, sharp surfaces or protrusions causes bumps, bruises, and cuts.

(3) Stay inside painted hazard lines and keep clear of aircraft “prop arcs”.

(4) We do not make any warranty, expressed or implied, that your workplace is safe or healthful or that it complies with all laws, regulations or standards.

Enrichment Reading

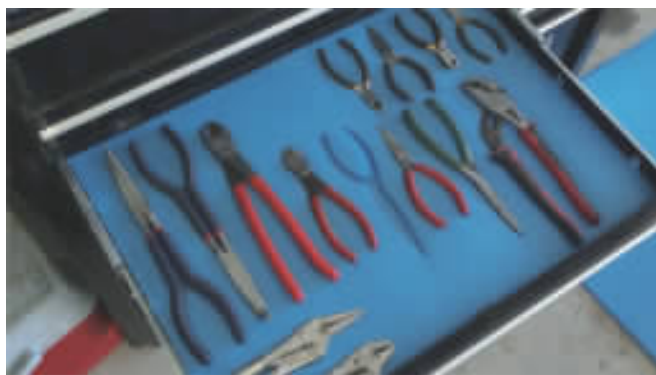
Text B Tool Control Requirements

When performing any type of maintenance, it is your responsibility to comply with all safety procedures and tool control requirements. Because no one set of rules applies to all aircrafts, you should refer to the maintenance instruction manual (MIM) for the tools, materials, and procedures required for that particular aircraft or piece of equipment.

TOOL CONTROL PROGRAM. Major problems, such as aircraft accidents and incidents, may result from tools left in aircrafts after maintenance has been performed. Tools out of place may result in foreign object damage (FOD). To reduce the potential for tool FOD-related mishaps, the Tool Control Program (TCP) provides a means of rapidly accounting for all tools after completing a maintenance task on an aircraft or its related equipment.

TOOL CONTAINERS. The means by which tools can be rapidly inventoried and

accounted for is accomplished by using silhouetted tool containers. All tools have individual silhouetted locations that highlight a missing tool. These containers are called “shadow boxes.” A shadow (silhouette) of the tool identifies the place where the tool belongs. The TCP is based on the instant inventory concept and is accomplished, in part, through the use of shadow boxes. See the figure below. On containers where silhouetting is not feasible, a note with the inventory and a drawing of the container is included. Either system enables the work center supervisor or inspector to quickly ensure that all tools have been retrieved after a maintenance action.



QUALITY ASSURANCE/ANALYSIS (QA/A) RESPONSIBILITIES. The QA/A division is responsible for monitoring the overall Tool Control Program in the command. While monitoring the program or performing “spot checks”, the QA/A division will ensure that tool control procedures are being adhered to. Some of the special requirements are to ensure the following:

1. That all tools are etched with the organization code, work center, and tool container number.
2. That special accountability procedures are being complied with for those tools not suitable for etching.
3. That work center inventories are being conducted and procedures are being adhered, which are audited and accepted periodic spot checks in work center.
4. That all equipment, in the work centers/tool control centers, requiring calibration is scheduled and calibrated at the prescribed interval.
5. That defective tools received from supply and that tools of poor quality are reported to the related department.

All work center supervisors have specific responsibilities under the TCP. All tool containers should have a lock and key as part of their inventory. The supervisor should

be aware of the location of each container's keys and have a way of controlling them. When work is to be completed away from the work spaces, complete tool containers, not a handful of tools, should be taken to the job. If more tools are needed than the tool container contains, tool tags can be used to check out tools from other tool containers in the work center or from another work center.

Frequently Used Tools

1. wrenches/sockets 扳手/套筒

open end wrenches 开口扳手

spline end wrenches 梅花扳手

crowfoot wrenches 块扳手

combination wrenches 开口/梅花扳手

hex wrenches 内六角扳手

slab ratchet 平板棘轮扳手

ratchet wrenches 棘轮扳手

torque wrenches 力矩扳手

pipe wrenches 管钳

adjustable wrenches 活动扳手

six point sockets 六角套筒

twelve point sockets 梅花套筒

universal sockets 万向套筒

adaptor 转接头

socket extension 套筒接杆

universal joint 万向转接头

2. screwdrivers 螺丝刀

fast screwdrivers 快速螺丝刀

electronic miniature screwdrivers 仪表螺丝刀

phillips/cross screwdrivers 十字头螺丝刀

magnetic screwdrivers 磁性螺丝刀

flat tip/straight Screwdrivers 一字头螺丝刀

speeders 摇把

3. pliers 钳子

needle nose pliers 尖嘴钳

locking pliers 大力钳

safety wire twisters 保险丝钳

adjustable joint pliers 鹰嘴钳

connector plug 插头钳

wire strippers 剥线钳

combination slip-joint pliers 鱼口钳

convertible snap ring pliers 卡环钳

diagonal cutters 剪线钳

wire crimpers 压线钳

4. electronic tools 电气工具

safety lamp (miner's lamp) 矿灯

flashing light 手电

interphone 对讲机

electronic iron 电烙铁

earphone 耳机

static wrist 防静电手腕

battery 电池

charger 充电器

speaker 扬声器

receptacle 电源插座

electronic runner 电枪

electronic drills 电钻

flashing emergency light 指挥棒
ultrasonic 超声波

5. measuring tools 测量工具

steel rulers 钢板尺
tape rulers 卷尺
outside micrometer 螺旋卡尺
feeler (thickness) gauges 塞尺
measuring cup 量杯
dial caliper 游标卡尺
gauges 表

multi meter 三用表
meg ohm meter 兆欧表

6. diversiform 杂项

inspection mirror 反光镜
magnifier 放大镜
flexible two-claw pick up tool 软杆双爪式机械手
flexible magnetic pick up tool 软杆磁棒
utility knife 划刀
scraper knife 刮
snip (scissor) 剪刀
saw 锯子
chisels 凿子
punch 镫子
tripod (spider) 三脚架
copper hammer 铜榔头
iron hammer 铁榔头
rubber hammer 胶榔头

hook 弯勾

file 锉

nipper (pliers) 镊子

pin removal tools 销钉插拔工具

pneumatic runner 气枪

pneumatic drills 气钻

rivet gun 铆钉枪

injector (squirt) 注射器

oil cart 滑油加油车

hydraulic fluid cart 液压油加油车

grease gun 注油枪

dishcloth 抹布

glove 手套

rope 绳索

tools kit 工具箱

tools rack 工具架

jack 千斤顶

tommy bar 撬棒

work ladder 工作梯

grinding wheel 砂轮

sand paper 砂纸

adhesive tape 胶带

soldering tin 焊锡

tow bar 拖把

flashing vest 发光背心

goggle (blinkers) 护目镜

life belt (safety bell) 安全带

Words

mishap *n.* 灾祸, 不幸的事

silhouette *n.* 轮廓 *v.* 使……现出轮廓

feasible *adj.* 可行的, 切实可行的

supervisor *n.* 监督人, 主管人

retrieve *v.* 重新得到 *n.* 找回
 monitor *n.* 班长, 监控器 *v.* 监控
 overall *adj.* 全部的, 全面的
 adhere *v.* 黏附, 坚持, 遵守
 etch *v.* 蚀刻, 铭刻
 accountability *n.* 有责任, 有义务

audit *n.* 审计, 账 *v.* 查账
 calibrate *v.* 校准
 prescribe *v.* 指示, 规定, 处 (方),
 开 (药)
 interval *n.* 间隔, 幕间休息
 defective *adj.* 有缺陷的

Phrases

tool control requirement 工具管理要求	silhouetted tool container 呈现 (工具) 轮廓的工具箱
safety procedure 安全程序	shadow box 暗格
maintenance instruction manual (MIM) 维修操作手册	quality assurance/analysis division QA/A 质量保证和分析部门
tool control program (TCP) 工具管理条例	periodic spot check 定期抽查
foreign object damage (FOD) 外来物损伤	

Exercises

1. Answer the following questions.

(1) What's the purpose of the Tool Control Program (TCP)?

(2) What do "shadow boxes" refer to?

(3) What's the responsibility for the QA/A division?

(4) Who should be aware of the location of each container's keys and have a way of controlling them?

2. Translate the following sentences into Chinese.

(1) When performing any type of maintenance, it is your responsibility to comply with all safety procedures and tool control requirements.
