中等职业学校教学用书（机电技术专业）

机电专业英语

（第2版）

杨春生　主编

本书配有电子教学参考资料包

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内 容 提 要

本书是一本宽口径的专业英语教材，全书按模块式结构编写，有机械、模具、电子、自动化和数控五个模块，便于不同专业的学生选用，也方便教师在不同的模块中选择课文组织教学以适应教学改革的需要。全书各课所选内容篇幅适中、图文并茂，有较强的实用性。

本书可作为中等职业学校机电类及相关专业的教材，高职高专同类专业亦可选用，也可供有关工程技术人员参考使用。

本书配有电子教学参考资料包，以方便教师教学和学生自主学习。

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前言

本书是在2002年出版的中等职业学校电子信息类教材《机电专业英语》的基础上，根据中等职业教育专业的发展现状及原教材使用过程中的反馈信息而进行更新和修订而成的。

本书在修订过程中仍采用了模块式结构和开放型体系。基于中等职业教育专业的职业化和专业英语的工具化，本书在修订时，进一步降低了对英语语法知识的要求，而强化了对专业词汇的掌握，删除了原书中基础模块和翻译技巧方面的内容，增加了英文简历撰写方面的内容。全书由机械模块、模具模块、电子模块、自动化模块和数控模块组成。

在课文内容选择上，本书以实用性和适应性为出发点。所谓实用性，即针对学生今后要从事的工作，能做到学以致用，为此，我们选用和改编了相当篇幅的操作、编程、维护手册及使用说明书（本书中部分内容保持了原版风貌，就是为了使学生能身临其境，从而在今后的工作岗位上驾轻就熟）；所谓适应性，即适应当前中等职业学校学生的需要，选材时做到篇幅适中、图文并茂。另外，根据职业教育的实际需要，书中的练习侧重于对专业词汇的记忆和英译汉的训练。

本书由江苏信息职业技术学院杨春生主编，陆荣明、袁琦睦为副主编。其中，机械模块由陆荣明编写，模具模块由刘明洋编写，电子模块由袁琦睦编写，自动化模块由董富红编写，数控模块由王永红编写，杨春生统稿全书。在本书的编写过程中，江苏信息职业技术学院的任建伟副教授审阅了全稿，并提出了许多宝贵意见，在此深表感谢。

为了方便教师教学，本书还配有教学指南、电子教案和习题答案（电子版）。请有此需要的教师登录华信教育资源网（www.huaxin.edu.cn 或 www.hxedu.com.cn）免费注册后再进行下载，有问题时请在网站留言板留言或与电子工业出版社联系（E-mail: hxedu@phei.com.cn）。

限于编者的水平，书中错误和不当之处在所难免，欢迎广大读者不吝指正。

编　者

2007年6月

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PART I MECHANICS BLOCK

（机 械 模 块）

Lesson 1

Working Drawings (I)

During the design process, an engineer records ideas by means of sketches and design drawings of prototypes and their development. Once satisfied with the degree of perfection, the sketches are handed over to the draftsman who "takes off" the detail and makes working drawings of the whole unit. ①

A set of working drawings for a machine would include detail drawings of the various parts and an assembly drawing showing how these parts are assembled to make up the complete machine. ②

Detail drawings The detail drawing is used as the main reference in the manufacture of individual components. It should contain sufficient information to manufacture the part as well as suitable, fully dimensioned orthographic view of each part, together with other information that may be required in the manufacturing process. ③ A complete detail drawing should contain at least the following information (not necessarily in order of importance) (Fig. 1.1):

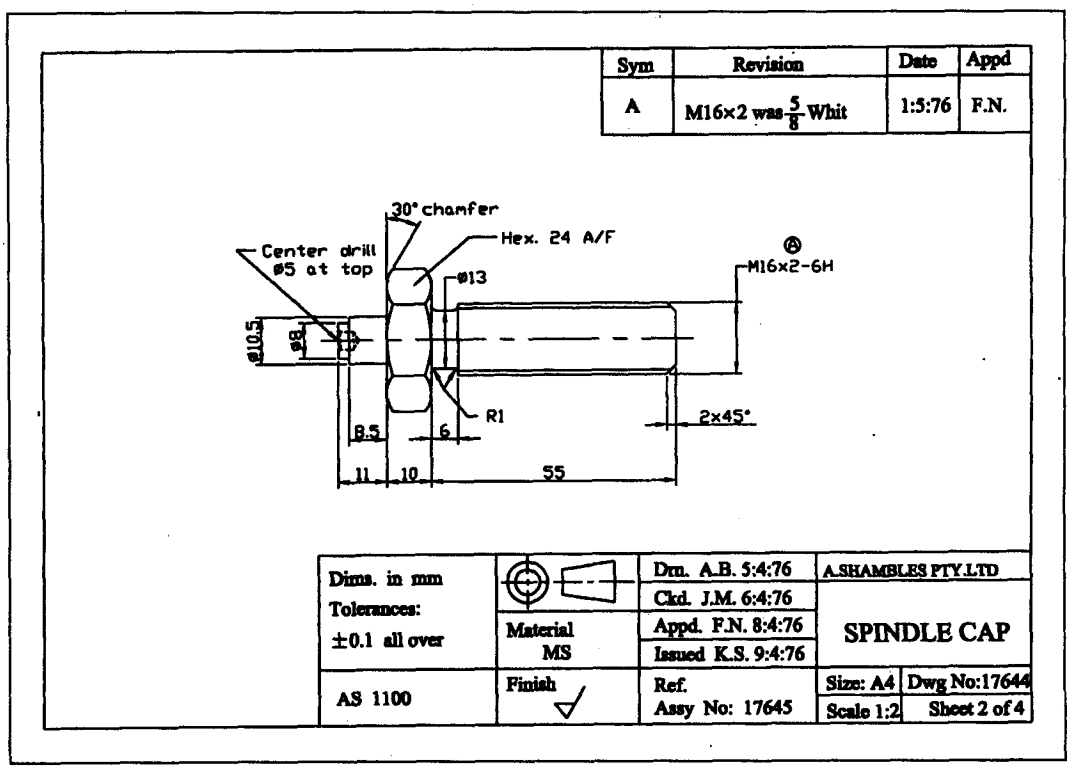

Fig. 1.1 A detail drawing

1. Sufficient orthographic views of the part concerned.
2. Dimensions and instructional notes.
3. Scale used.
4. Projection used, for example, first or third angle.

5. Drafting standard reference, for example, as 1, 100.
6. Name or title of drawing.
7. Dimensional units which apply.
8. Tolerances where necessary.
9. Surface finish requirements.
10. Special treatments needed.
11. Type of material used.
12. Names of draftsman, checker, approver, etc.
13. Relevant dates of action by those concerned.
14. Zone reference system when necessary.
15. Drawing sheet size.
16. Name of company or department as applicable.
17. Drawing sheet reference, for example, sheet 1 to 2.

New Words and Expressions

1. working drawings *n.* 工作图
2. sketch [sketʃ] *n.* 草图，简图
3. prototype ['prəutətaip] *n.* 原型，样机
4. development [di'veləpmənt] *n.* 发展，研制
5. perfection [pə'fekʃ(ə)n] *n.* 完成，完美
6. draftsman ['drɑ:ftsmən] *n.* 绘图员
7. detail ['di:teil] *n.* 零件；细节，详细；详图
8. assembly [ə'sembli] *n.* 装配
9. individual [ˌindi'vidjuəl] *a.* 个别的
10. component [kəm'pəunənt] *n.* 零件，部件
11. dimension [di'menʃ(ə)n] *n.* 尺寸
12. orthographic [ɔ:θəu'græfik] *a.* 正交的，正投射的
13. view [vju:] *n.* 视图
14. in order of 按照……次序
15. instructional [in'strʌkʃ(ə)nəl] *a.* 指导的，说明的
16. projection [prə'dʒekʃ(ə)n] *n.* 投影
17. tolerance ['tɔlərəns] *n.* 公差
18. finish [finiʃ] *n.* 光洁度
19. approver [ə'pru:və] *n.* 批准者
20. relevant ['relivənt] *a.* 有关的，相关的
21. zone [zəun] *n.* 带，范围，区域
22. applicable ['æplikəbl] *a.* 合适的，能应用的

Note

①Once satisfied with the degree of perfection, the sketches are handed over to the draftsman

who "takes off" the detail and makes working drawings of the whole unit.

句中 who 引导限制性定语从句，修饰 the draftsman。takes off 意为：复制。

译文：当对设计感到满意时，草图就交给绘图员绘制设备的整套工作图。

②A set of working drawings for a machine would include detail drawings of the various parts and an assembly drawing showing how these parts are assembled to make up the complete machine.

句中 showing…是现在分词短语作定语，修饰 an assembly drawing。how 引导宾语从句。

译文：一套机器的工作图包括各个零件的零件图和一张装配图，装配图显示这些零件如何装配成完整的机器。

③It should contain sufficient information to manufacture the part as well as suitable, fully dimensioned orthographic view of each part, together with other information that may be required in the manufacturing process.

句中 to manufacture the part 是不定式短语作目的状语。that 引导限制性定语从句，修饰 other information。

译文：它应包含制造零件足够的信息，也就是每个零件应具有完整尺寸的正视图，以及制造零件所需的其他信息。

Exercises

1. Translate the following terms into English.

（1）工作图 （2）零件图 （3）装配图 （4）视图 （5）图纸

2. Translate the following sentences into Chinese.

（1）The three principal views of an object are the front view, the top view and the left side view.

（2）Sometimes in representing a complex object, it is not enough to draw its three views only, so the six principal views of an object in the same plane are adopted.

（3）The partial view is only a part of an object which is projected to the principal projection plane, the partial views are also bordered with a break line.

（4）If two cylinders are with no difference in diameter, then the projection of intersection will appear as two straight lines.

（5）Any solids of geometric combination, no matter how complex, can always are decomposed into several simple shapes and parts.

Reading Material

Working Drawings (Ⅱ)

Assembly drawings Assembly drawings are primarily used to show how a number of components are fitted together to make a complete product unit. The term subassembly is commonly applied to a product unit which combines with other subassemblies to make an assembly. For example, an assembly drawing of a motor car engine would show a number of complete units included on the drawing. Each of these units is referred to as a subassembly of the engine assembly.

Assembly drawings may be divided into two types depending on the proposed use:

1. General assembly where the main purpose is to identify the individual components and show their working relationship;

2. Working or detailed assembly combined detail and general assembly drawing which provides the function of both types.

Features of a general assembly drawing are:

1. Views are selected which show how the parts fit together and indicate how the unit may function.

2. Sectional views are used to eliminate the use of hidden detail lines where possible.

3. Dimensions which relate to the function of the unit as a whole are indicated, for example, the *maximum* and *minimum operating heights* of the jack.

4. Individual components are identified by the use of numbers contained in circles, which are connected by leaders to the related parts.

5. A parts list relates to the numbers on the drawing and identifies the component.

6. A revision table is provided to record modifications to individual components which may *occur from time to time.*

7. Some assemblies may be so large that it is necessary to draw different views of the assembly on separate sheets.

Features of a working assembly drawing are:

1. Only simple assemblies are drawn in this manner as views have to be chosen which show the assembly relationship as well as sufficient dimensional details of individual components to enable their manufacture.

2. It is ideally suited to furniture construction drawings where the assembly views are not complex and details of joints may be enlarged and shown as partial views.

The information provided on a general assembly drawing is somewhat different from that required on a detail drawing. Information on the manufacture of individual parts is not required, for example, surface finish, tolerances or treatments. However, assembly instructions are required as are dimensions which may be used for installation purposes or which are relevant to the operation of the assembly as a working unit.

Words and Expressions

1. subassembly [sʌbəˈsembli] *n.* 部件
2. identify [aiˈdentifai] *vt.* 识别，给……做标记
3. modification [ˌmɔdifiˈkeiʃ(ə)n] *n.* 修改；改进
4. furniture [ˈfəːnitʃə] *n.* 设备
5. enlarge [inˈlɑːdʒ] *vi.* 扩大
6. joint [dʒɔint] *n.* 连接，接头
7. partial [ˈpɑːʃəl] *a.* 部分的，局部的

Lesson 2

Creating Drawings with AutoCAD

This text introduces AutoCAD for Windows, a software widely used in industrial design and production.

When you first start AutoCAD, an empty, unnamed drawing is open. You can begin working with this drawing immediately.

To create a new drawing using Start from Scratch

1. From the File menu, choose New.
2. In the Create New Drawing dialog box, choose Start from Scratch (Fig. 2. 1).
3. Under Select Default Setting, select English or Metric, and then choose OK. The drawing opens with the default AutoCAD settings.
4. From the File menu, choose Save As.
5. In the Save Drawing As dialog box under File Name, enter a name for the drawing and choose OK.

The drawing extension (. dwg) is automatically appended to the file name.

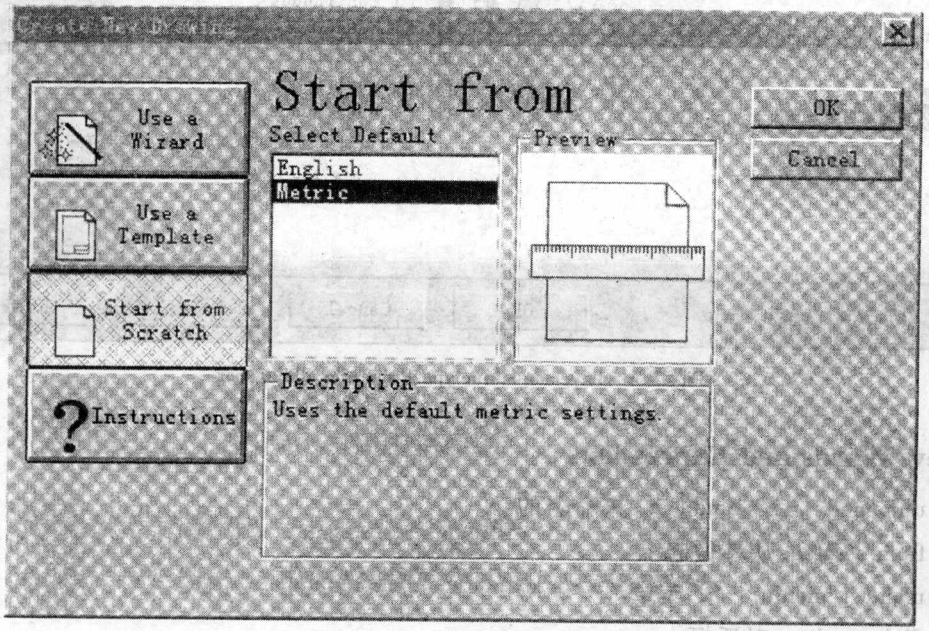

Fig. 2. 1 Create New Drawing dialog box

Working with layers

An AutoCAD drawing can have layers, similar to the transparent overlays drafters use to create pencil drawings. For example, in a drawing of a house you can have the wall lines on one layer, the electrical wiring on a second layer, and plumbing on a third. It's helpful to use different colors for different layers so you can tell them apart.

To create a new layer

1. From the Format menu, choose Layer.

2. In the Layer and Linetype Properties dialog box, choose New (Fig. 2.2). A layer called Layer1 is displayed.

3. Click Layer1 and enter a new layer name.

The layer name can include up to 31 characters. Layer names can contain letters, digits, and the special characters dollar sign ($), hyphen (-), and underscore (_). Layer names cannot include blank spaces.

4. To change a layer's color, select the layer and click its Color icon. In the Select Color dialog box, select a color and choose OK.

5. To change a layer's linetype, select the layer and click its Linetype icon. In the Select Linetype dialog box, select a linetype.

6. Choose OK to exit each dialog box.

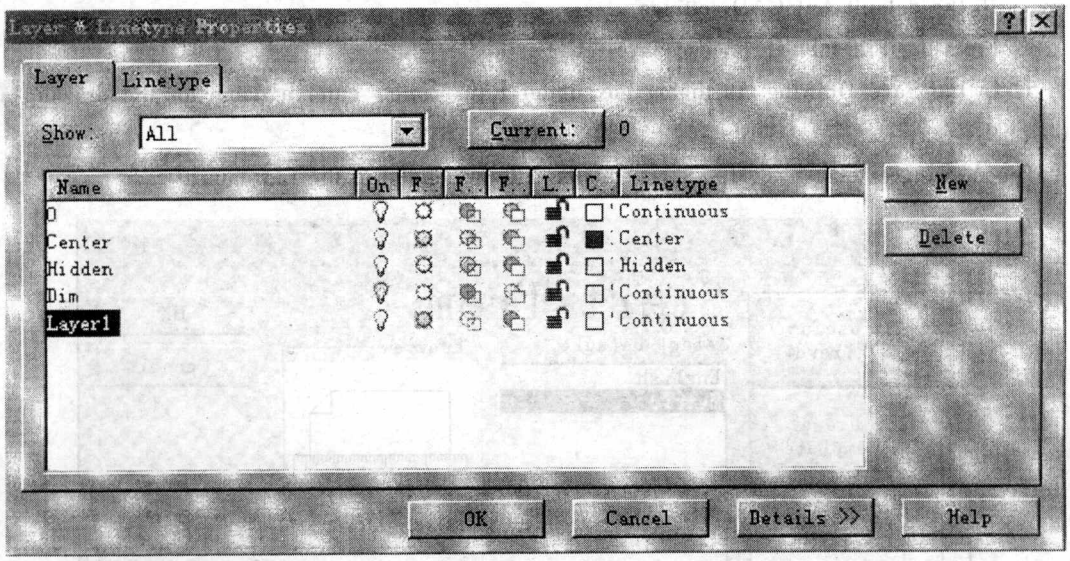

Fig. 2.2 Layer and Linetype Properties dialog box

New Words and Expressions

1. unnamed [ʌn'neimd] *a.* 未命名的
2. from scratch 从零做起
3. menu ['menju:] *n.* 菜单
4. dialogue box 对话框
5. default [di'fɔ:lt] *n.* 默认
6. extension [ik'stenʃ(ə)n] *n.* 扩展名
7. layer ['leiə] *n.* (图) 层
8. transparent [træns'pærənt] *a.* 透明的
9. overlay [ˌəuvə'lei] *n.* 覆盖 (图)
10. drafter ['drɑ:ftər] *n.* 起草人；制图员，描图员

11. wiring ['waiəriŋ] *n.* 线路，配线
12. plumbing ['plʌmiŋ] *n.* 管道
13. format ['fɔ:mæt] *n.* 格式
14. property ['prɔpəti] *n.* 性质
15. character ['kæriktə] *n.* 字符
16. digit ['didʒit] *n.* 阿拉伯数字
17. hyphen ['haifən] *n.* 连字号
18. underscore [ˌʌndə'skɔ:] *n.* 下划线，底线
19. icon ['aikɔn] *n.* 图标
20. linetype ['laintaip] *n.* 线型

Notes

AutoCAD for Windows 是目前使用很广泛的一种计算机辅助设计与制图软件。本课课文摘自其英文版的帮助文件（Help）。帮助文件是学生学习计算机软件时经常碰到的英语文章。熟练地阅读英文版的帮助文件对学生十分重要。

Exercises

1. Translate the following terms into English.

（1）菜单 （2）对话框 （3）默认设置 （4）另存为 （5）图层 （6）图标

2. Translate the following paragraph into Chinese.

To create a text style

（1）From the Format menu, choose Text Style.

（2）In the New Text Style dialog box, choose New.

（3）In the New Style dialog box, enter a name for the text style.

The new style you've created has all the characteristics shown in the Text Style dialog box. You can continue to change characteristics, such as the font, or you can do it later.

（4）Choose OK to close the New Style dialog box.

（5）If you have made any changes to the style characteristics, choose Apply to save them.

（6）After you have made and applied all changes to the text style, choose Close. (Cancel becomes Close after you choose Apply.)

Reading Material

Establishing Basic Settings in AutoCAD

When you start AutoCAD, it creates a new unnamed drawing for you. You can either start drawing objects in this blank drawing or open an existing drawing.

If you open an existing drawing, all of the command and system variables settings last used on that drawing are restored because this information is saved in the drawing file.

When you start a new drawing, there are a few settings you will want to establish to assist you during the drawing process. The Setup Wizard will assist you automatically; however, you can