

# English for Mechanical Profession

# 机械英语

● 全国行业英语系列统编教材

主 编 邹晶明 欧阳美和



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# 前言

## FOREWORD

近年来,我国的高等职业教育在国家政策的大力扶持下,得到了长足的发展,人才培养模式更加符合我国现阶段经济发展的需求,课程设置更加重视实用知识的传授和实践能力的培养。教育主管部门与时俱进,对高职高专的英语教学适时做出调整,提出“实用为主,工学结合”的指导原则,在日常的英语教学中加大了专业英语教学的比重,凸显了专业英语教学的重要性。

《机械英语》正是为了满足广大高职高专院校开设专业英语课程的要求,遵循教育部高等教育司颁发的《高职高专教育英语课程教学基本要求》的指导原则而进行编写的。为了做好这项工作,我们除了遵循教育部规定的一般原则外,还特别注意到了如下几点:

一、专业特色明显。本教材所选的材料与一般的机械科普读物不同,不是对于专业知识的简单罗列,而是对专业知识的梳理介绍,目的是提高学生的专业英语阅读能力,使其能够在今后的工作中自主地吸收国际同行的有益经验和知识。

二、难易程度适中。考虑到学生的实际英语水平,我们所编写的课文材料篇幅一般不长,生词难度得到了有效的控制,而且专有名词和专



业性较强的句子均有注释。为了增加直观性,书中配有多幅插图,以方便理解和掌握。

三、材料新颖完整。为了反映机械行业的工作实际,我们的选材从常用的工程制图、工程材料到数控、计算机辅助设计与制造等均有涉及,并且主要参考了国外近几年出版的专业书籍。

四、主题中心突出。在一个单元里,无论是主副课文的选材,还是练习的设计,都是围绕一个中心,目的是以多种形式帮助学习者熟悉和掌握本单元的内容,以期增强其专业英语的综合应用能力,真正做到学以致用。本教材配有 MP3 音频材料,为学生自学提供了方便。

本书的教学任务可在一学期内完成,每周四学时,任课教师可根据学校的实际需要自行合理安排。

本书由邹晶明、欧阳美和主编,阎庆华、柏青、蔡璇、石华中为编者。此外,新侨学院机电、汽车系的同仁也为此书的编写给予了大力支持。但由于时间仓促,书中缺点和不足在所难免,希望使用本书的同仁能慷慨指出,以备再版时修正。

编 者

2010年3月于上海



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# UNIT 1

## Engineering Drawing (工程制图)

### Part I Reading and Translating

#### Section A Types of Views (视图的种类)

##### 1.1 Basic Views

##### 1.2 Sectional Views

##### 1.3 Broken Views

##### Exercises

#### Section B Mechanical Drawings and Dimensioning (机械制图及标注)

##### 1.4 Dimensioning

##### 1.5 Detail Drawings

##### 1.6 Assembly Drawings

##### Exercises

### Part II Listening and Speaking

### Part III Writing: Description of First-angle Projection (第一视觉投影)

## Part I Reading and Translating

### ►► Section A Types of Views (视图的种类) ►►

Engineering drawing is a graphic language shared by people in different nations. It deals with the means of representation of a designer's idea by lines or marks on the surface. In engineering environment, drawings or views are chosen to describe material objects like machine parts. Therefore, only the minimum number of views or drawings is used to portray the size and shape of a part completely, as shown in the following.

#### 1.1 Basic Views

##### The First-angle Projection

Generally, there are **six principle views** to represent a machine part. These views are obtained by projecting to six principle projection-planes (Fig. 1-1). Frequently, in industry, three views are chosen to show fully the shape of an object, which consists of three adjacent views — the top, front and left side views, called first-angle projection. In first-angle projection, the “top” view is pushed down to the floor of the box, and the “front” view is pushed back to

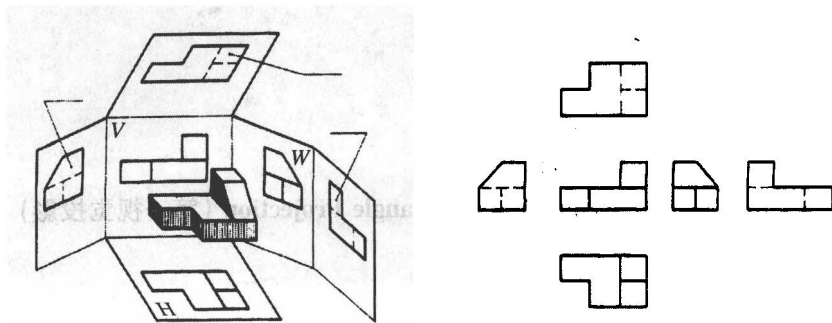


Fig. 1-1 Six Principle Views

the rear wall; and the representation of the “left” view is projected in the right sight of the object (Fig. 1 - 2).

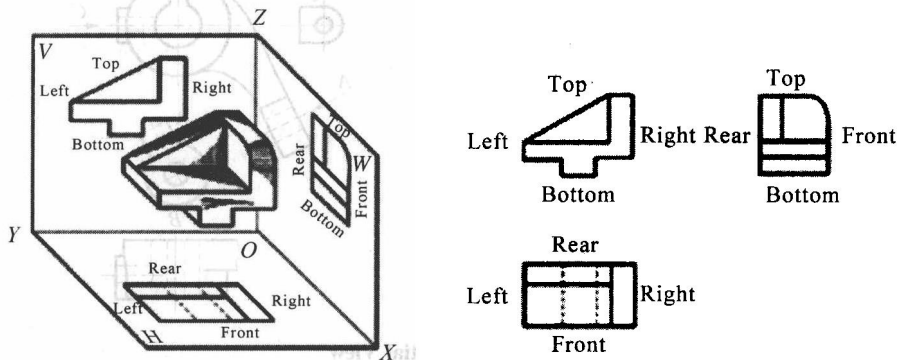


Fig. 1 - 2 Three Views

### Auxiliary Views

If necessary, an auxiliary view will be combined with a partial view. An auxiliary view is another orthographic projection on a plane (not one of the principle planes). One of its characteristics is a projection on a plane perpendicular to one of the principle planes (Fig. 1 - 3).

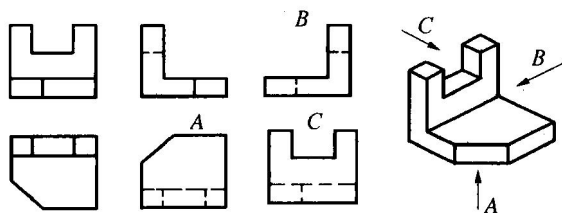


Fig. 1 - 3 Auxiliary Views of an Object

### Partial Views

Principle views are generally used to represent an object. If some part of an object is not shown clearly and it is not necessary to draw the whole principle view, but to project the local part of the object to the principle plane, we can get a projection view of this part, called partial view as shown in Fig. 1 - 4.

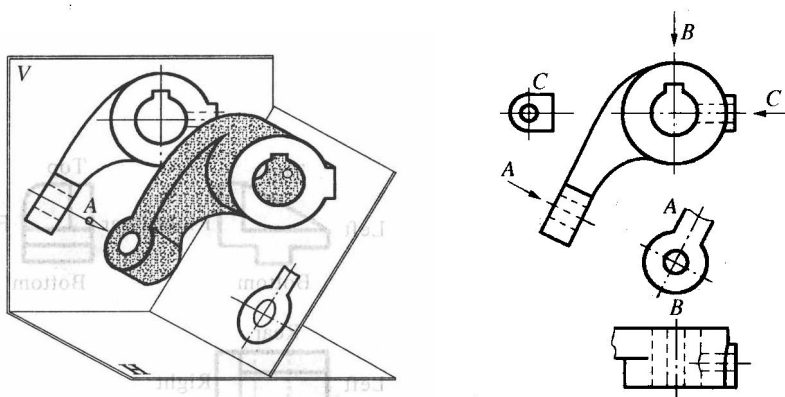


Fig. 1 - 4 Partial View

## 1.2 Sectional Views

A simple object may have an invisible and complicated internal design, while a view “in section” can clearly display the detailed structure. A sectional view is supposed to have a cutting plane. Its front part is removed and this leaves the remainder exposing the interior features. Representations of this kind are specified mainly by full and half views.

### Full View

A full view is derived from a cutting plane passing entirely through an object. The resulting section will show the whole model on the datum plane (Fig. 1 - 5).

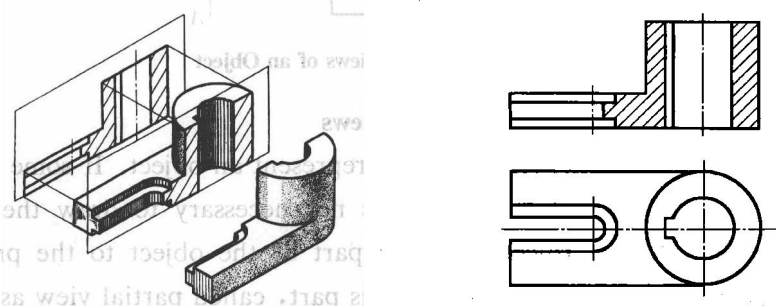


Fig. 1 - 5 Full-sectional Views of an Object

### Half View

If the cutting plane cuts only half-way across the object, usually symmetrical, a half view of the section appears. A sectional view of this type deals with the representation of both the interior and exterior construction of a symmetrical object, as shown in Fig. 1 - 6.

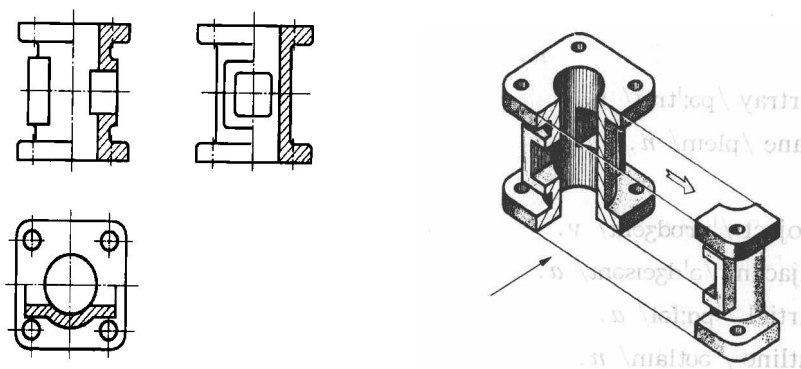


Fig. 1 - 6 Half-section View of an Object

### 1.3 Broken Views

From a geometric point of view, a broken view is an orthographic projection of an object from the position of a plane. View of this type is used to display only a cross-section of a body for a particular view (Fig. 1 - 7). More plainly, it is supposed to cut an object perfectly along a cutting plane, where the parallel cross section can be drawn.

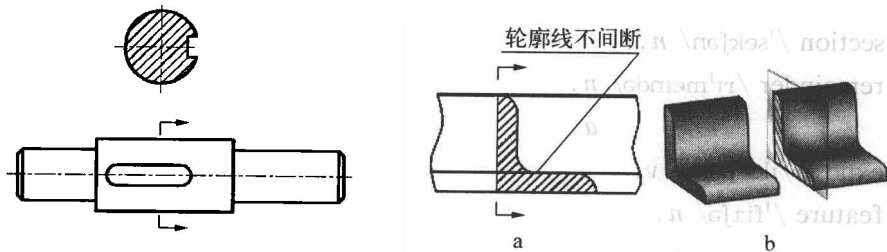


Fig. 1 - 7 Broken View



## NEW WORDS

- |                                   |    |          |
|-----------------------------------|----|----------|
| 1. graphic /'græfɪk/              | a. | 图形的, 图表的 |
| 2. minimum /'mɪnɪmə/              | a. | 最小的      |
|                                   | n. | 最小值      |
| 3. portray /pə'reɪ/               | v. | 描绘, 描画   |
| 4. plane /pleɪn/                  | n. | 平面       |
|                                   | v. | 刨, 刨平    |
| 5. project /'prɒdʒekt/            | v. | 投射       |
| 6. adjacent /ə'dʒeɪsənt/          | a. | 邻近的, 接近的 |
| 7. partial /'pɑːʃəl/              | a. | 部分的, 局部的 |
| 8. outline /'aʊtlaɪn/             | n. | 轮廓, 略图   |
|                                   | v. | 描画轮廓, 略述 |
| 9. auxiliary /ɔːg'zɪliəri/        | a. | 辅助的, 补助的 |
| 10. combination /kəm'bɪneɪʃən/    | n. | 结合, 联合   |
| 11. orthographic /ɔːθə'græfɪk/    | a. | 正交的, 直线的 |
| 12. perpendicular /pə'pændɪkjələ/ | a. | 垂直的, 正交的 |
|                                   | n. | 垂线       |
| 13. complicated /'kɒmplɪkətɪd/    | a. | 复杂的, 难解的 |
| 14. internal /ɪn'tɜːnl/           | a. | 内在的; 国内的 |
| 15. detail /'diːteɪl, dɪ'teɪl/    | v. | 详述, 细说   |
|                                   | n. | 细节, 详情   |
| 16. section /'sekʃən/             | n. | 截面, 断片   |
| 17. remainder /rɪ'meɪndə/         | n. | 残留(人/物)  |
|                                   | a. | 剩余的      |
| 18. expose /ɪks'pəʊz/             | v. | 使暴露, 揭露  |
| 19. feature /'fi:tʃə/             | n. | 特征, 特色   |
|                                   | v. | 是……的特色   |
| 20. represent /rɪ'prezɪzənt/      | v. | 表现, 描绘   |

representation /ˌreprɪzen'teɪʃən/ <i>n.</i>	表现, 表述
21. specify /'spesɪfaɪ/ <i>v.</i>	指定, 详细说明
specification /ˌspesɪfɪ'keɪʃən/ <i>n.</i>	规格, 说明书
22. datum /'deɪtəm/ <i>n.</i>	基准面; 数据; 资料
23. symmetrical /sɪ'metrɪkəl/ <i>a.</i>	对称的, 均匀的
24. interior /ɪn'tɪəriə/ <i>a.</i>	内部的
<i>n.</i>	内部
25. exterior /eks'tɪəriə/ <i>a.</i>	外部的, 表面的
<i>n.</i>	外部, 表面
26. geometric /dʒɪə'metrɪk/ <i>a.</i>	几何的; 几何学的

## TECHNICAL EXPRESSIONS

1. engineering drawing	工程制图
2. the first-angle projection	第一视角投影
3. projection view	投影图
4. projection-plane	投影面
5. partial view	局部视图
6. auxiliary view	辅助视图
7. sectional view	剖视图
8. full view	全剖视图
9. half view	半剖视图
10. broken view	断面图
11. section view/drawing	剖面图
12. section-lining	剖面线
13. cross-section	横截面

## Notes

1. Engineering drawing is a graphic language shared by people in different





nations.

工程制图是世界各国人们都使用的一种绘图语言。

句中 shared by people in different nations 为过去分词短语作后置定语,修饰前面的先行词 a graphic language, 相当于定语从句。

2. These views are obtained by projecting to six principle projection-planes.

这类视图是由向 6 个基本投影面的投影而形成。

projecting to six principle projection-planes 为动名词短语作介词 by 的宾语。

3. A sectional view is supposed to have a cutting plane.

剖视图有一个假想的剖切面(切削平面)。

to have a cutting plane 为不定式短语作主语补足语。

4. A full view is derived from a cutting plane passing entirely through an object.

The resulting section will show the whole model on the datum plane.

当剖面通过全部物体时,所得到的是一幅全剖视图,所得到的剖面在该基准面上展示出整个物体的模型。

passing entirely through an object 为现在分词短语作 a cutting plane 的后置定语。

5. One of its characteristics is a projection on a plane perpendicular to one of the principle planes.

它的一个主要特征就是其在一个平面上所产生的投影与其他几个基本投影面之一互为垂直。

6. It is not necessary to draw the whole principle view, but to project the local part of the object to the principle plane.

没有必要绘出完整的基本视图,只需将这一局部形状向基本投影面投射。

not ... but ... 为一固定结构。

7. In mechanical drawing, a broken view is also an orthographic projection of an object from the position of a plane.

机械绘图中,断面图也是一个物体“面”的正投影。

8. More plainly, it is supposed to cut an object perfectly along a cutting plane, where the parallel cross section can be drawn.

更确切地讲,假想的剖切平面将物体的某一处截断,仅就截断面处的形状绘成图形。

where 引导了一个非限制性定语从句修饰 a cutting plane。



## Exercises

### I. Tell whether each of the following statements is true or false.

1. Graphic representation means dealing with the expression of ideas by lines or marks impressed on the surface.
2. In engineering environment, three views are chosen to show fully the shape of an object; these drawings include the top, front and left side views.
3. Sectional views extremely serve the purpose of displaying the detailed structure of an object.
4. A view "in section" is one obtained by imagining the object cut by a cutting plane, the front portion being removed in order to show clearly the interior features.
5. An auxiliary view is derived from projecting to an inclined surface at an angle larger than 90 degrees, or a more inclined plane.
6. A broken section needs to remove a section between two points in order to make the two remaining sections close together.
7. Not all views are necessarily used, and the determination of what surface constitutes the front, back, top and bottom depends on the projection used.
8. In first-angle projection, the "top" view is under the front view, the right view is at the left of the front view.

### II. Match the items listed in the following columns.

- |                |                                       |
|----------------|---------------------------------------|
| a. minimum     | 1. inside of something                |
| b. adjacent    | 2. close to                           |
| c. complicated | 3. the shape of an object or a figure |
| d. internal    | 4. not easy to understand or analyze  |
| e. partial     | 5. a flat or level surface            |
| f. plane       | 6. only a part; not total             |
| g. expose      | 7. to make visible                    |
| h. outline     | 8. to cause to lean; slant            |