



第十三章 联轴器

§ 13—1 General considerations

概述

§ 13—2 Specific couplings

具体联轴器

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§ 13—1 General considerations

概述 Functions 功用:

Link two coaxial shafts and transmit the torque and motion between them.

连接两轴使之一同回转并传递扭矩。

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二、 Distinction Between couplings and clutches 与离合器的区别

❖ Couplings Shafts connected by couplings can be disengaged from each other only by disassembling the coupling after stopping the machine

联轴器：停车后经拆卸才能使两轴分离；

❖ Clutches Shafts connected by clutches can be engaged or disengaged from each other in operation

离合器：工作中就能使两轴分离或结合。



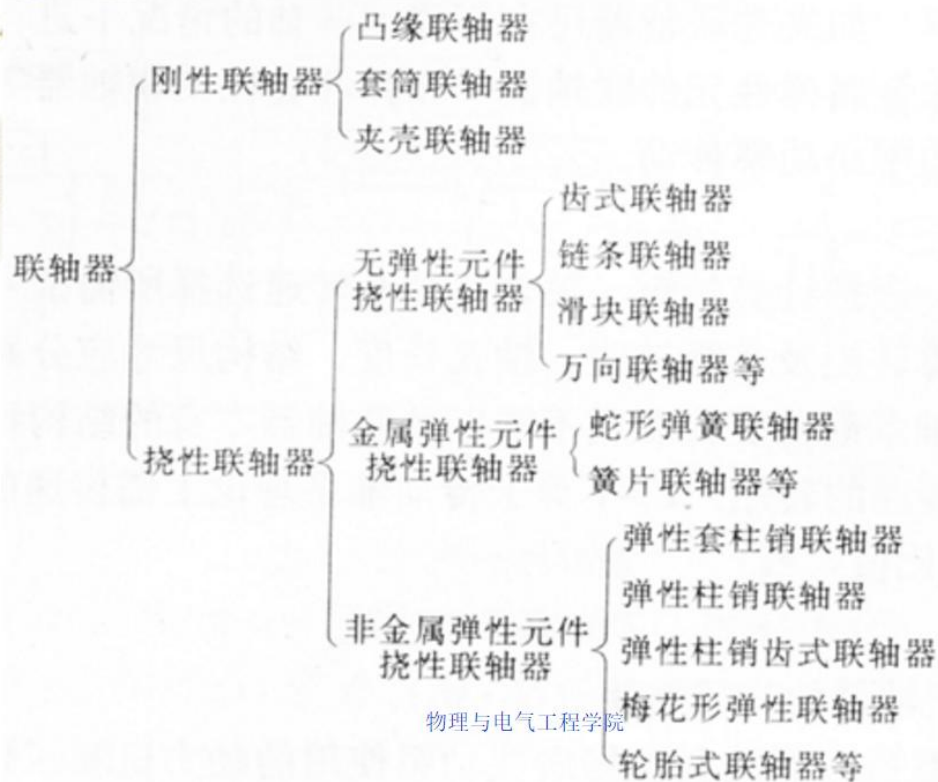
三、 Types of couplings

❖ Rigid couplings: Intended for rigidly joining coaxial shafts

刚性联轴器：适应两轴能严格对中，工作中不发生相对位移；

❖ Compensating or flexible couplings: Intended for joining shafts having misalignment.

挠性联轴器：适应两轴有偏斜或工作中有相对位移。

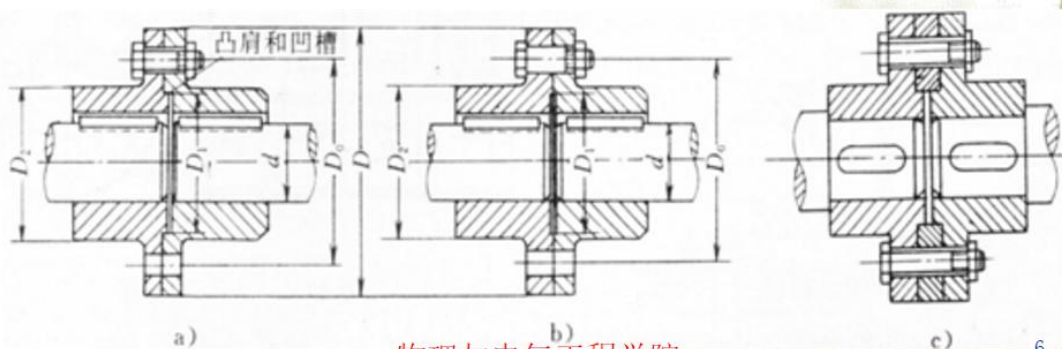


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§ 13-2 Specific couplings 具体联轴器

一、Rigid couplings 刚性联轴器:

1、Flange couplings 凸缘联轴器



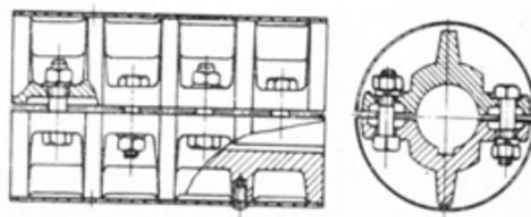
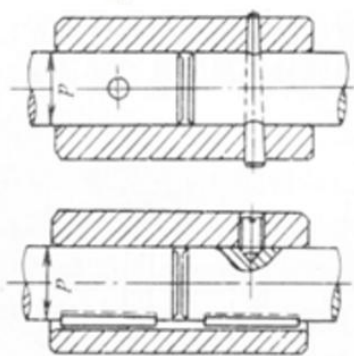
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2、Sleeve couplings 3、Clamp couplings

套筒联轴器 夹壳联轴器



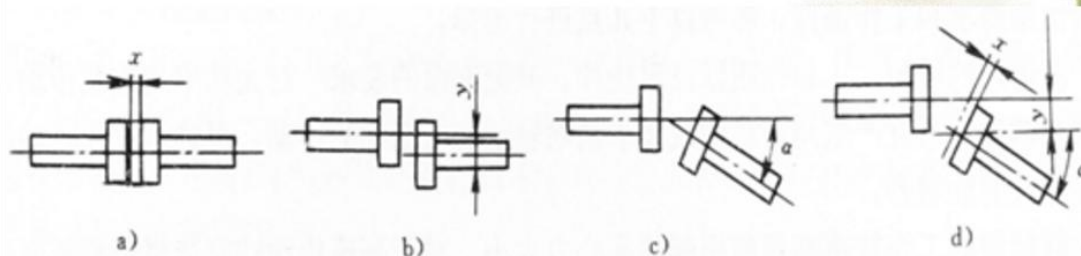
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Features of rigid couplings : Simple and low cost but can not compensate misalignment between two shafts. Misalignment types between two shafts

刚性联轴器特点：结构简单、成本低；但不能补偿两轴的偏斜和位移两轴间位移的分类：



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- ❖ x —— Axial misalignment 轴向位移、
- ❖ y —— Radial misalignment 径向位移、
- ❖ α —— Angular misalignment 角位移、
- ❖ (x, y, α) —— Combined misalignments

综合位移

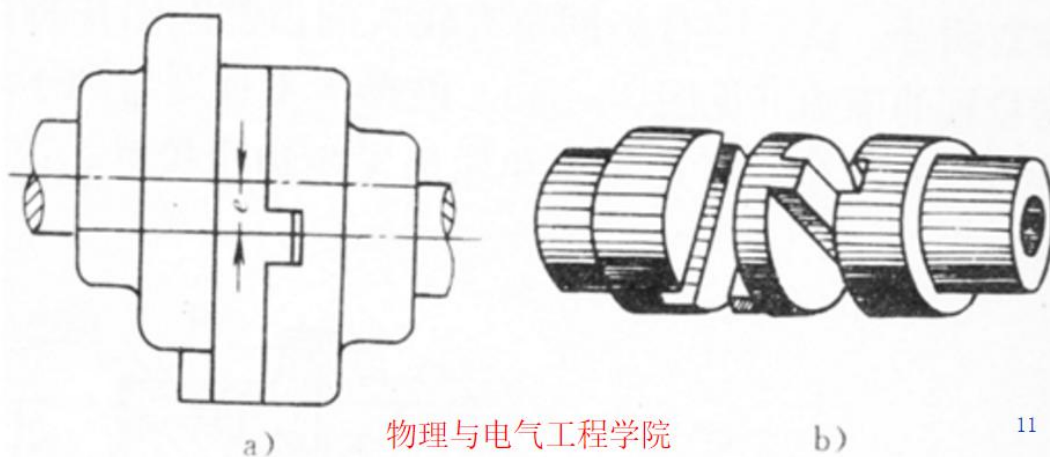
- ❖ Compensating methods 位移补偿方法：
 - ① By means of motion link → Compensating couplings
利用动联接、构成活动度 → 无弹性元件挠性联轴器；
 - ② By means of deformation of elastic elements
→ Flexible couplings
利用弹性元件变形 → 无弹性元件挠性联轴器。

二、Compensating and movable couplings



无弹性元件的挠性联轴器

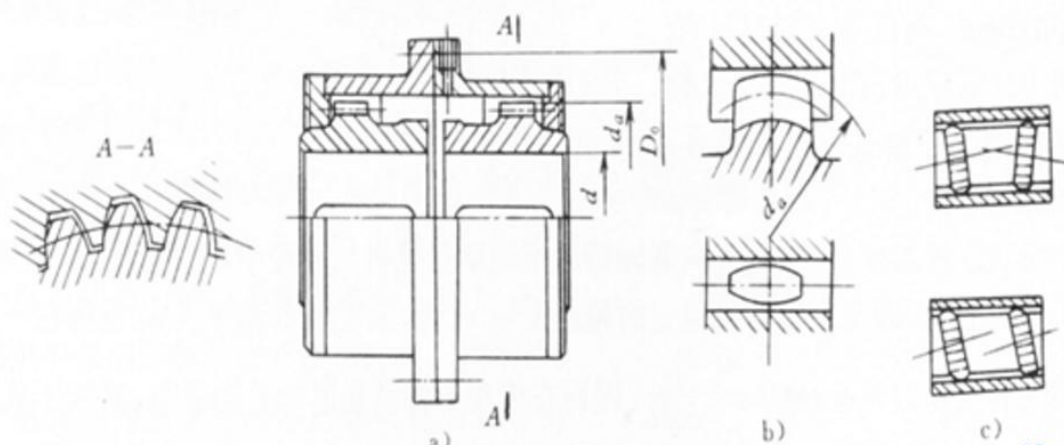
1、Cross-type couplings (movable) 滑块联轴器



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2、Toothed couplings (Compensating) 齿轮联轴器 (补偿综合位移)

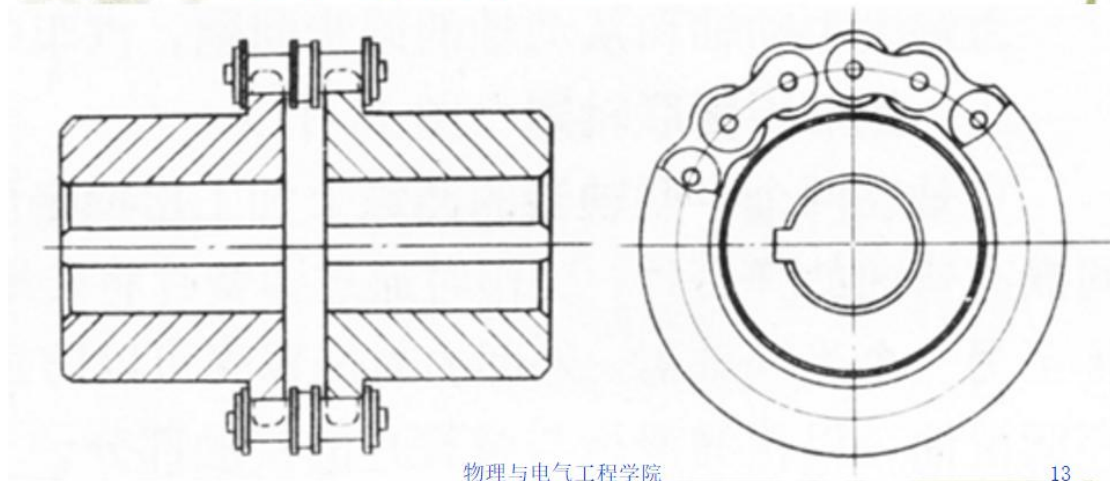


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3、Chain-type couplings (Compensating)

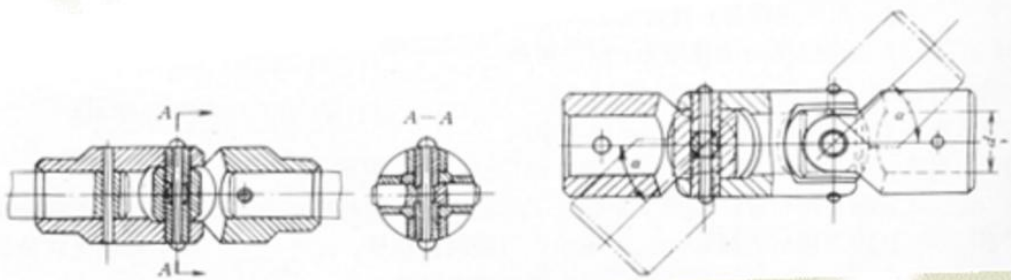
滚子链联轴器



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4、Universal couplings (movable) 万向联轴器（补偿大的角位移）



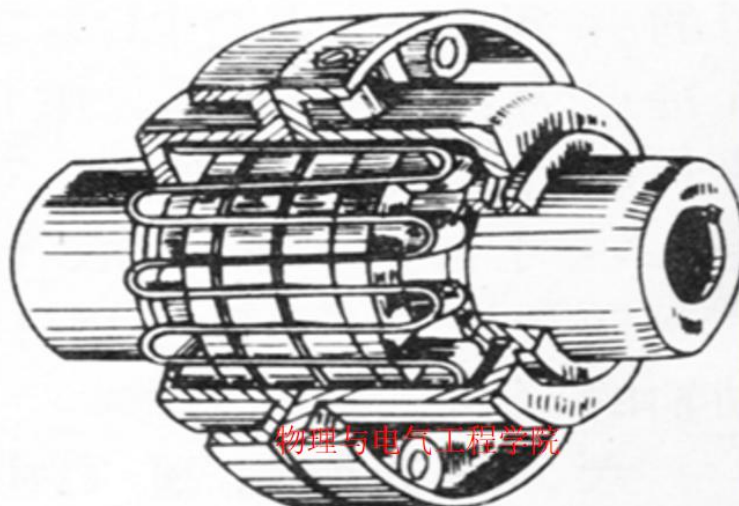
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三、 Flexible couplings with metal elastic elements 金属弹性元件挠性联轴器

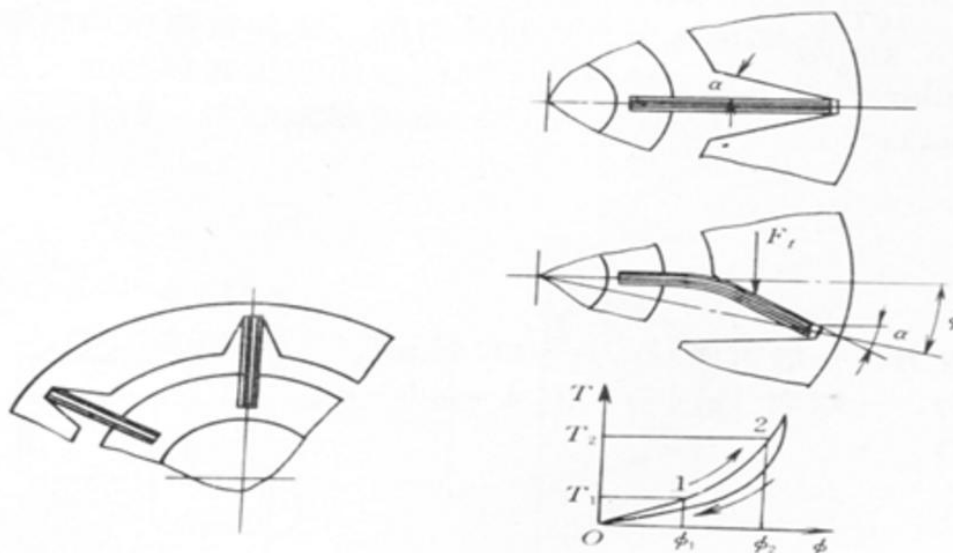
1、 Serpentine-spring coupling 蛇形弹簧联轴器



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2、 Flat spring coupling 径向簧片联轴器



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四、Flexible couplings with non-metal elastic elements

非金属弹性元件挠性联轴器

Advantages: Cushion shocks of the load and absorb vibration; simple and low cost.

缓冲、吸振、结构简单、成本低

Shortcomings : Lower strength and larger oversize dimension

强度低、尺寸大

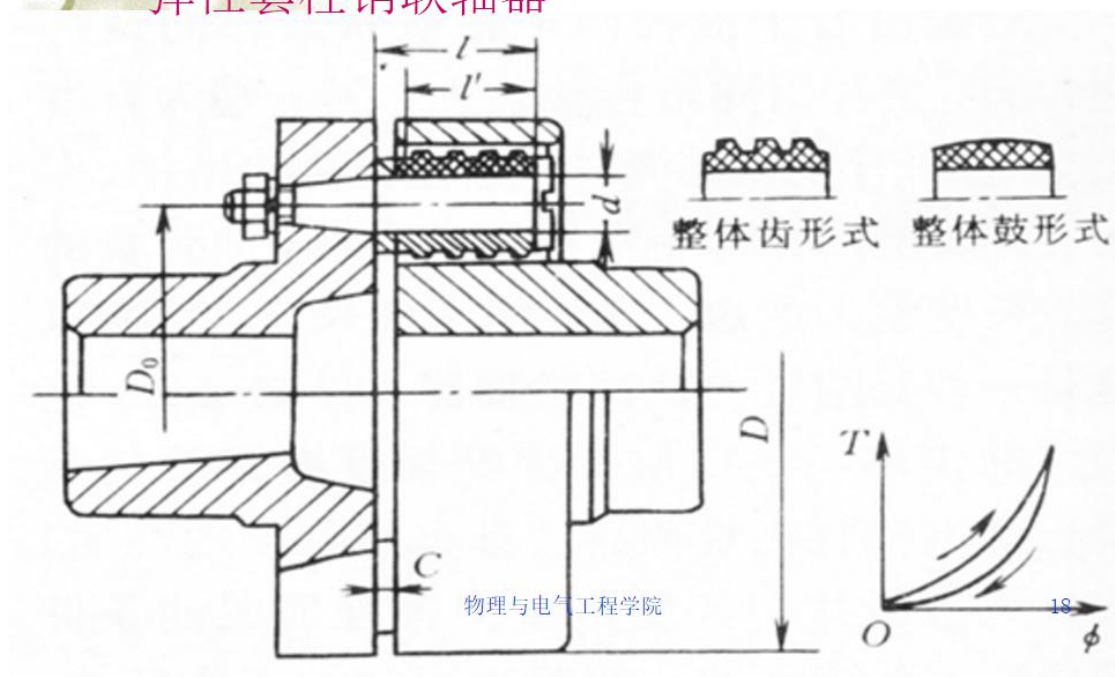
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BACK

1、Pin-and-bushing flexible coupling

弹性套柱销联轴器





2、 Elastic pin coupling 弹性柱销联轴器

