Mechanics and Machines, Lecture 7

Links, Joints, Connections

Shafts, Axles, Shafts couplings

Bearings

Innopolis University

Mechanism

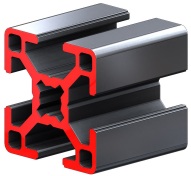
What does the mechanism consist of?

- Links
- Joints
- Connections: permanent and detachable

Links

Types (my classification)

Sheet (Листовой материал): plywood (фанера)



Profile (профиль): T-slot (Конструкционный профиль)

Beam (Брус): al. bar (ал. брус)

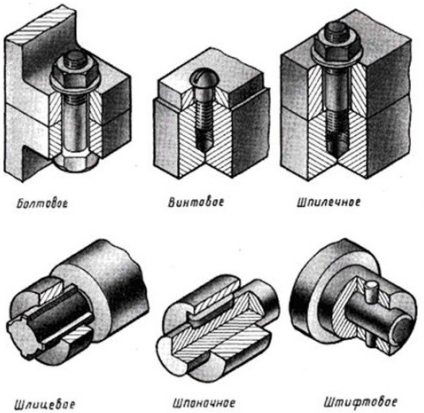
Plate (плита): Aluminum billet (Заготовки)

Joints

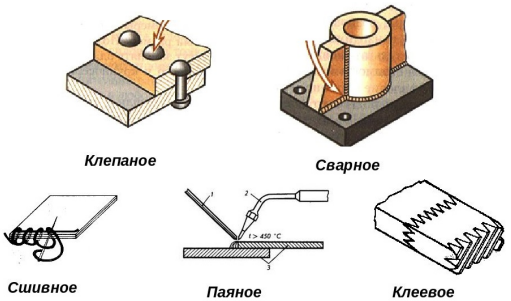
More info in **Lecture 3**

Connections

Classification



Detachable (Разъемные)



Permanent (Неразъемные)

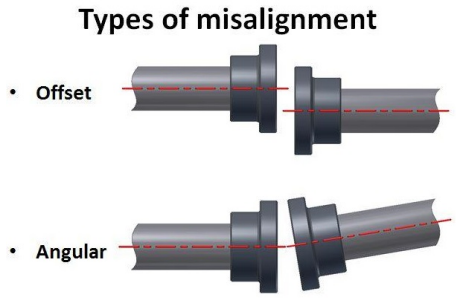
Shaft (Вал), Spindle (Шпиндель), Axle (Ось)

Video

Shaft Coupling

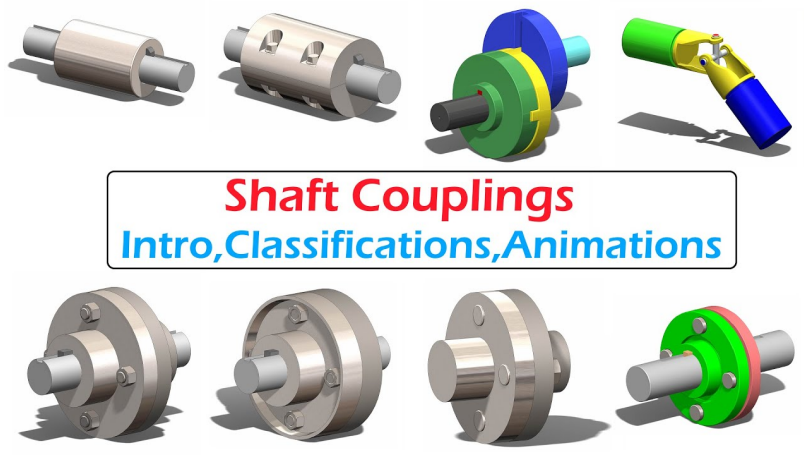
Intro

The shaft coupling is referred to as that mechanical component which is most commonly used for the purpose of *connecting two rotating shafts* like the driving shaft in order to let the driven shaft work for purpose of *transmitting power*.



Shaft Coupling

Video



Types of shaft couplings

Sleeve Coupling

Split-Muff Coupling

Flanged Coupling

Flexible Coupling

Oldham Coupling

Universal Coupling

Gear Coupling

Fluid Coupling

Practical usage of Shaft Couplings

Video

Shafts + Shaft Couplings

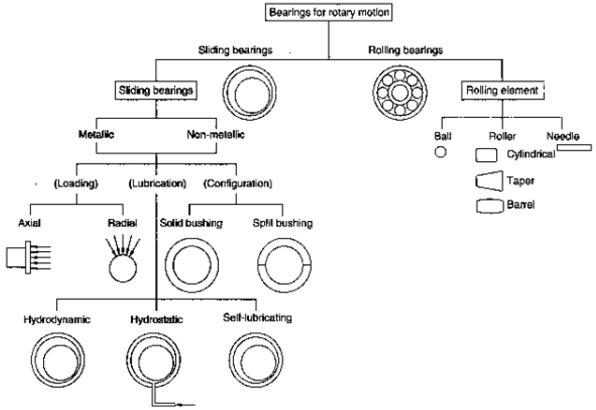
Reference material

- Shafts (video, rus)
- Classification of couplings, Types of couplings, Coupling types (Indian, video)
- Text material about shaft couplings

Bearings

Definition

Bearing is a machine element that *constrains relative motions* and is used to *reduce the friction* between moving parts.



Bearings

Reference material

- Bearings 1
- Bearings 2
- Linear Guideway
- Linear Ball bearings
- uninstall and install bearings
- Выбор посадки подшипников
- Проектирование подшипниковых опор
- Как раз про проектирование подшипниковых опор
- pillow block
- Подшипники качения на руссокм
- Подшипники скольжения на русском

Reference material

1. List of Basic Mechanical Parts (video)
2. Types of shaft keys
3. Шлицевые и шпоночные на русском
4. Сварные соединения на русском
5. Заклепочные соединения на русском
6. Резьбовые соединения на русском
7. Mott R. L., Vavrek E. M., Wang J. Machine Elements in Mechanical Design, Ed. — 2011
8. Avallone E. A., Baumeister III T., Sadegh A. Marks' standard handbook for mechanical engineers. — McGraw-Hill Education, 2007.
9. Budynas R. G. et al. Shigley's mechanical engineering design. — New York : McGraw-Hill, 2011.

Deserve “A” grade!

– Oleg Bulichev

o.bulichev@innopolis.ru

@Lupasic

Room 105 (Underground robotics lab)