

Motion transmission systems

Complete this concept review handout and keep it as a record of what you have learned.

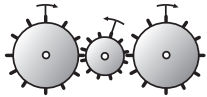
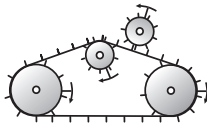
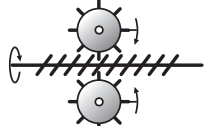
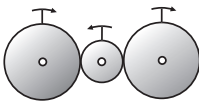
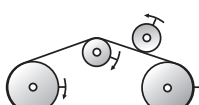
Definitions

- Motion transmission is the mechanical function of relaying a motion from one part to another without altering the nature of the motion.
- A motion transmission system is a set of components that perform the function of transmitting motion.

Types of components in a mechanical system

Type of component	Description
Driver component	Component that receives the force required to activate the system.
Driven component	Component that receives the motion and transfers it to another part.
Intermediate component	Component located between the driver and driven components

Characteristics of motion in motion transmission systems

Motion transmission system		Direction of rotation of components	Reversibility
<u>Gear train</u>		<u>Alternates from one gear to another.</u>	Yes
<u>Chain and sprocket system</u>		<u>Depending on the configuration, identical only for sprockets touching the same side of the chain</u>	Yes
<u>Worm and worm gear system</u>		<u>Varies with the direction of the threads on the worm screw shaft.</u>	No
<u>Friction gear system</u>		<u>Alternates from one gear to another.</u>	Yes
<u>Belt and pulley system</u>		<u>Depending on the configuration, identical only for pulleys touching the same side of the belt</u>	Yes

Elements to consider when building motion transmission systems

System	Elements to consider
<p><i>Gear train</i></p> <p>_____</p> <p>_____</p>	<p>1. The teeth of all the gears must be identical.</p> <p>2. Gear type depends on the gears' rotational axis. If the axes are parallel, the gears are straight. If the axes are perpendicular, the gears are bevelled.</p> <p>3. The larger the diameter of a gear, the slower its rotation</p>
<p><i>Chain and sprocket system</i></p> <p>_____</p> <p>_____</p>	<p>1. The teeth on the sprockets must be identical.</p> <p>2. The chain links must mesh easily with the sprocket teeth.</p> <p>3. The system requires frequent lubrication.</p> <p>4. The smaller a sprocket, the faster it turns.</p>
<p><i>Worm and worm and gear system</i></p> <p>_____</p> <p>_____</p>	<p>1. The groove of the worm must fit the gear teeth so that they can mesh.</p> <p>2. The driver must be the worm.</p>
<p><i>Friction gear system</i></p> <p>_____</p> <p>_____</p>	<p>1. Straight, bevel or spherical gears may be positioned along parallel, perpendicular or other rotational axes.</p> <p>2. The bigger a gear, the slower its rotation</p> <p>3. Materials that adhere well to one another must be used for the gear rims.</p>
<p><i>Belt and pulley system</i></p> <p>_____</p> <p>_____</p>	<p>1. Pulleys must contain a groove where the belt can fit.</p> <p>2. The belt must adhere to the pulleys.</p> <p>3. The smaller a pulley, the faster it turns.</p>