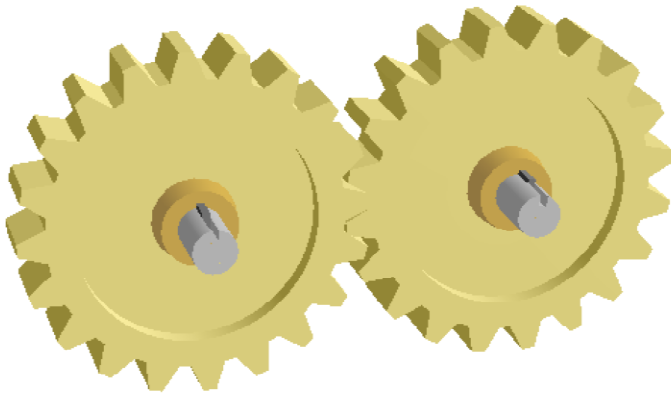
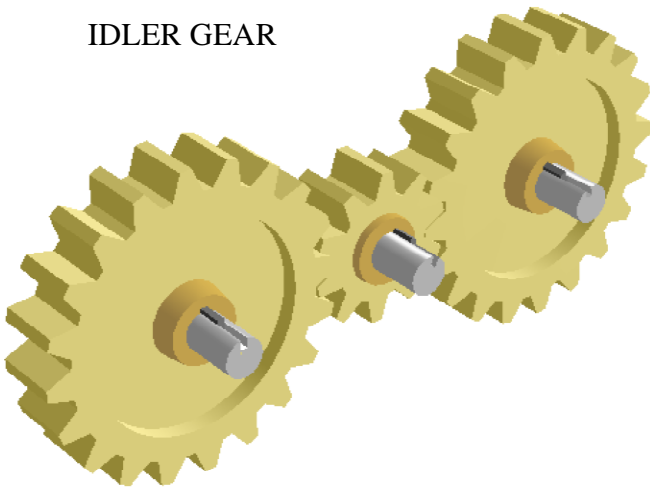


SIMPLE GEAR TRAIN



A simple gear train uses two gears, which may be of different sizes. If one of these gears is attached to a motor or a crank then it is called the driver gear. The gear that is turned by the driver gear is called the driven gear.

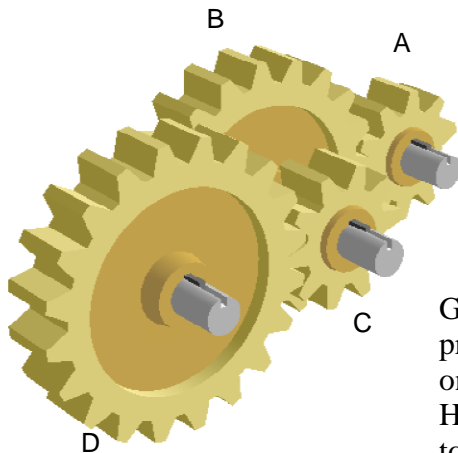
IDLER GEAR



When a simple gear train has three meshed gears, the intermediate gear between the driver gear and the driven gear is called an idler gear.

An idler gear does not affect the gear ratio (velocity ratio) between the driver gear and the driven gear.

COMPOUND GEAR TRAIN



Compound gear trains involve several pairs of meshing gears. They are used where large speed changes are required or to get different outputs moving at different speeds.

Gear ratios (or velocity ratios, VR) are calculated using the same principle as for simple gear trains, i.e. $VR = \frac{\text{number of teeth on the driver gear}}{\text{number of teeth on the driven gear}}$. However, the velocity ratio for each pair of gears must then be multiplied together to calculate the total velocity ratio of the gear train:

Total VR = $VR_1 \times VR_2 \times VR_3 \times VR_4$ etc.

$$\text{Gear Ratio} = \frac{\text{no of teeth on B}}{\text{no of teeth on A}} \times \frac{\text{no of teeth on D}}{\text{no of teeth on C}}$$