

15-394 Intermediate Rapid Prototyping

Gears and Linkages

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Types of Gears



Spur Gears



Crown Gear



Bevel Gears

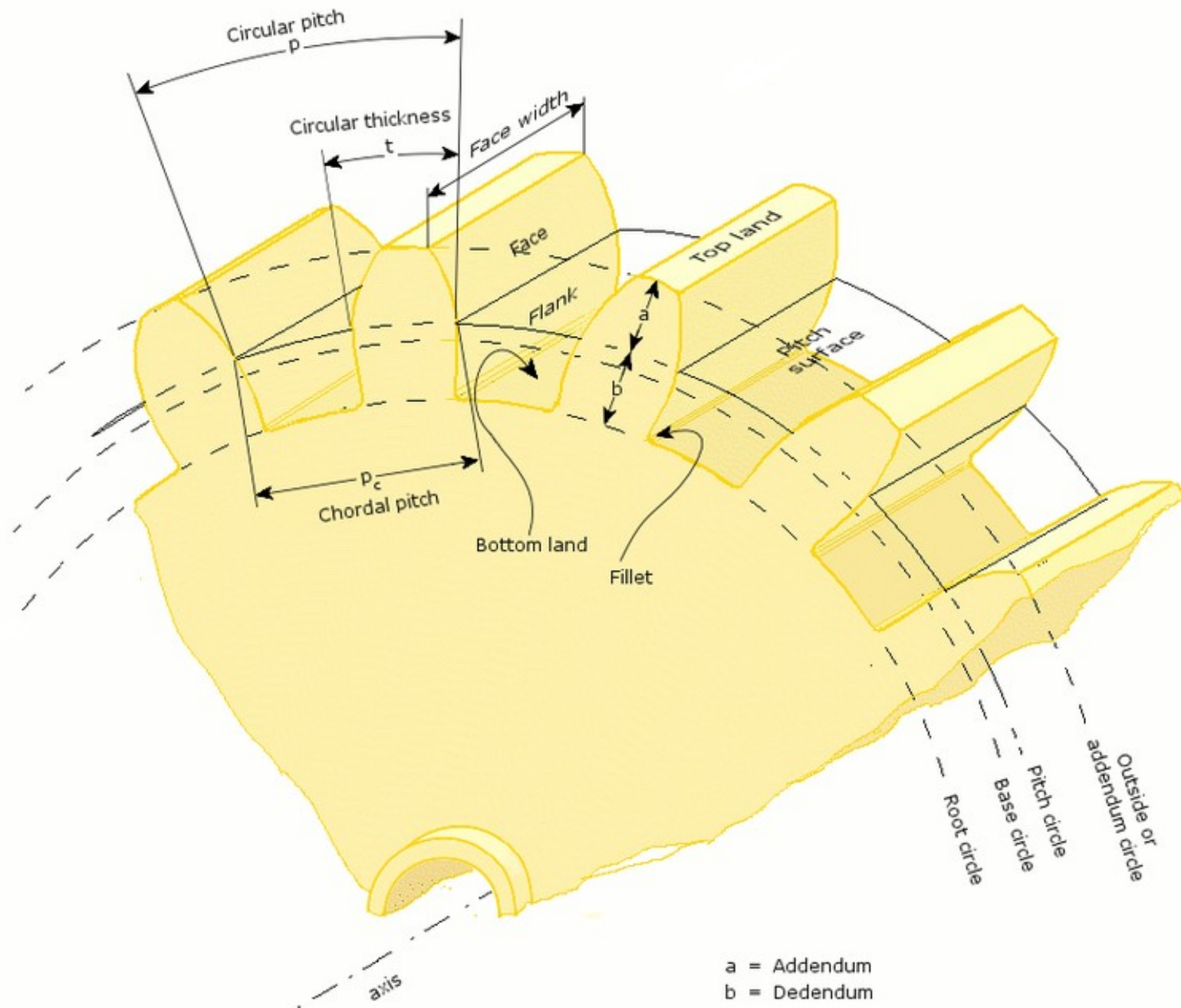


Helical Gears

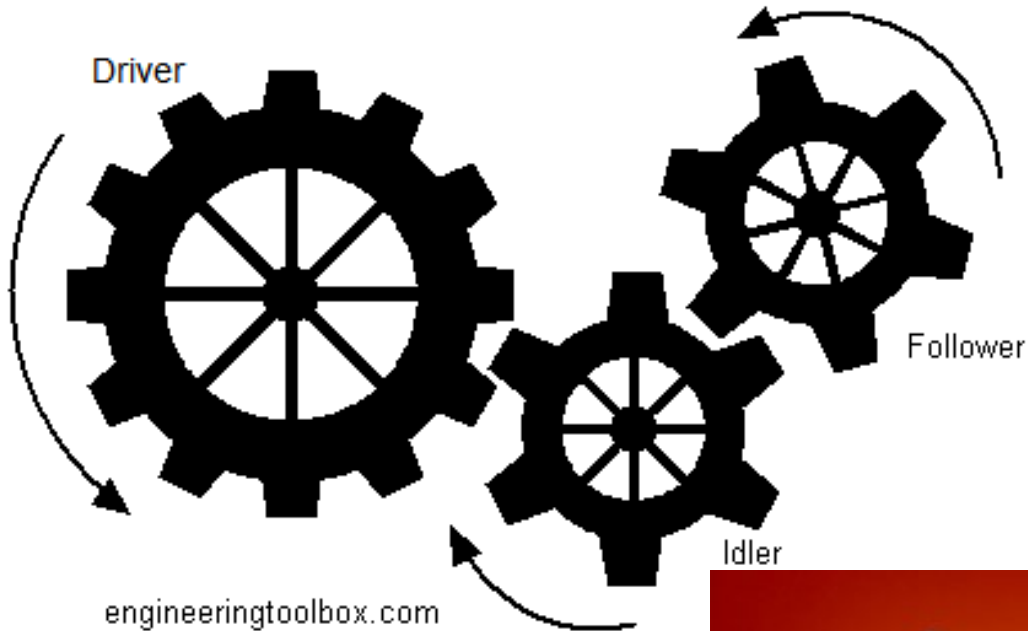


Worm Gear

Spur Gear Design Parameters



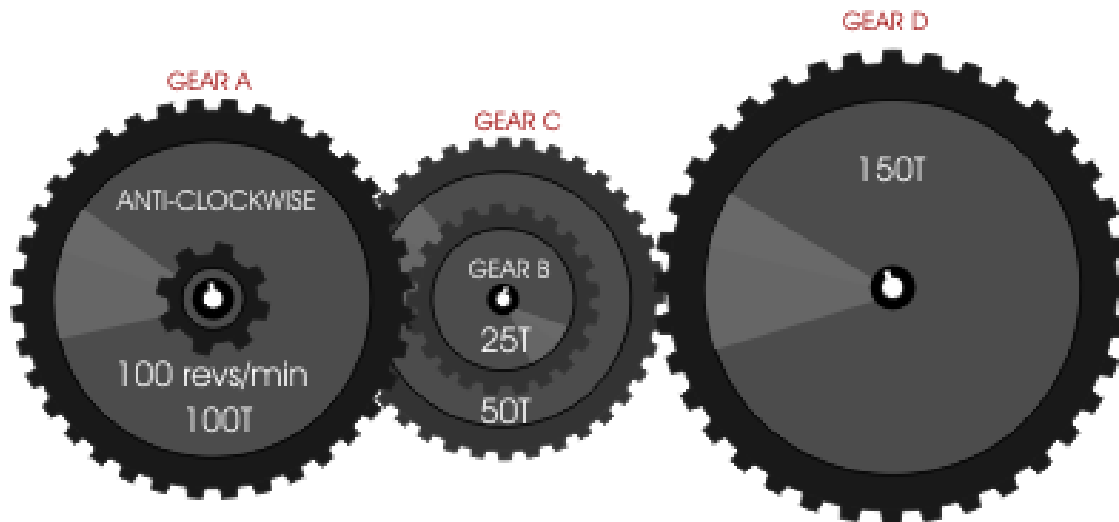
Gear Train



The gear ratio depends only on the number of teeth in the driver (input) and follower (output) gears.



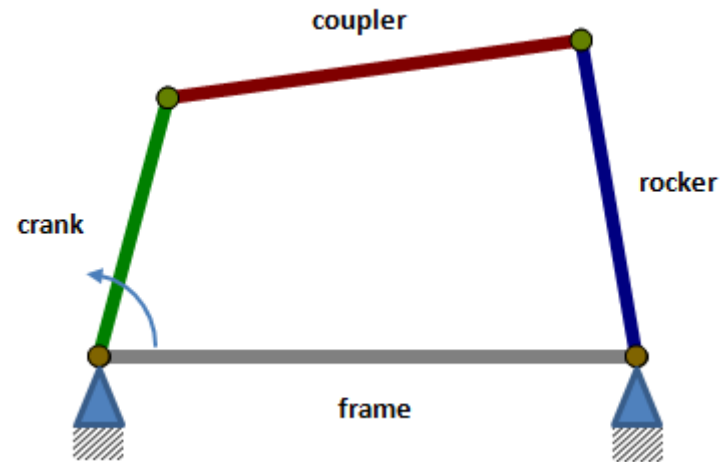
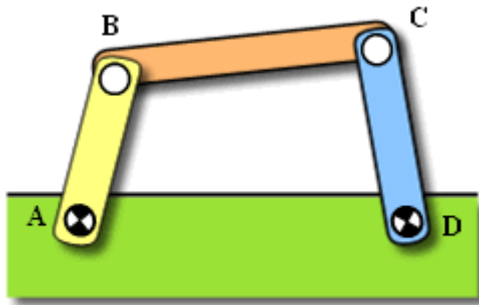
Compound Gears



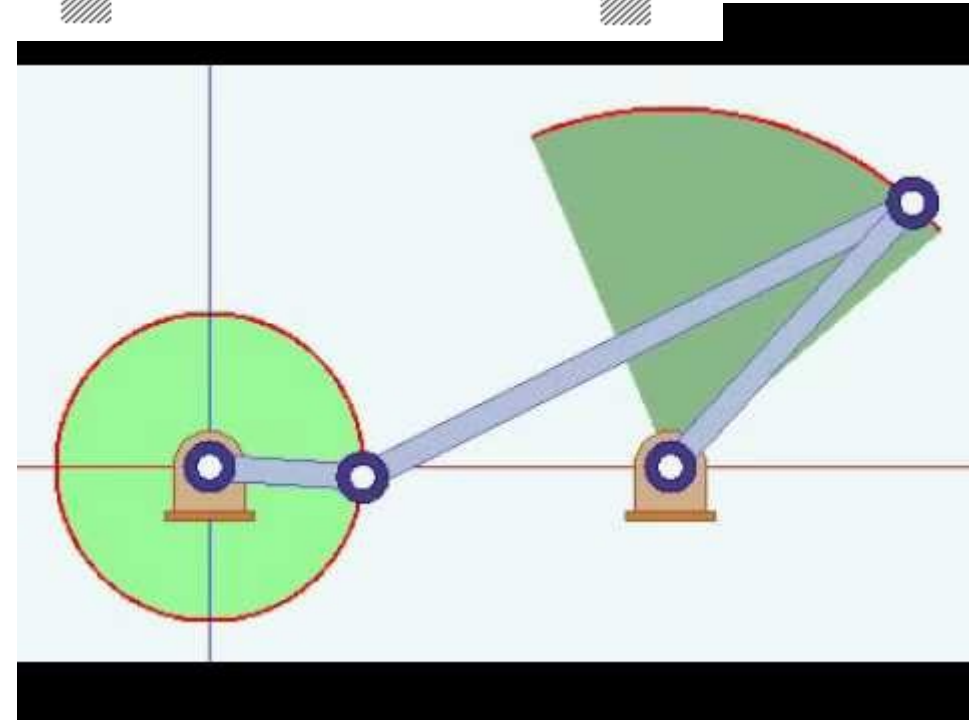
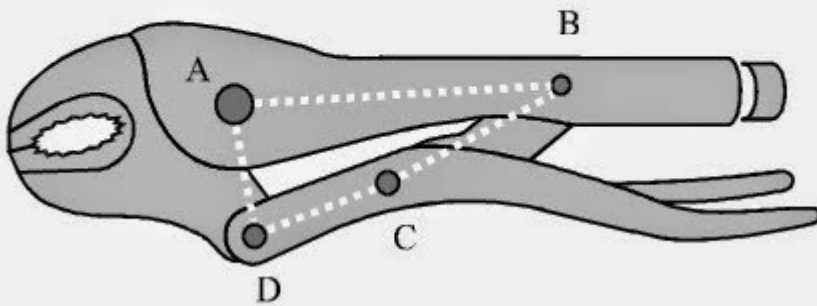
Gear ratios multiply:

$$(100:25) \times (50:150) = 4 \times (1/3) = 4/3$$

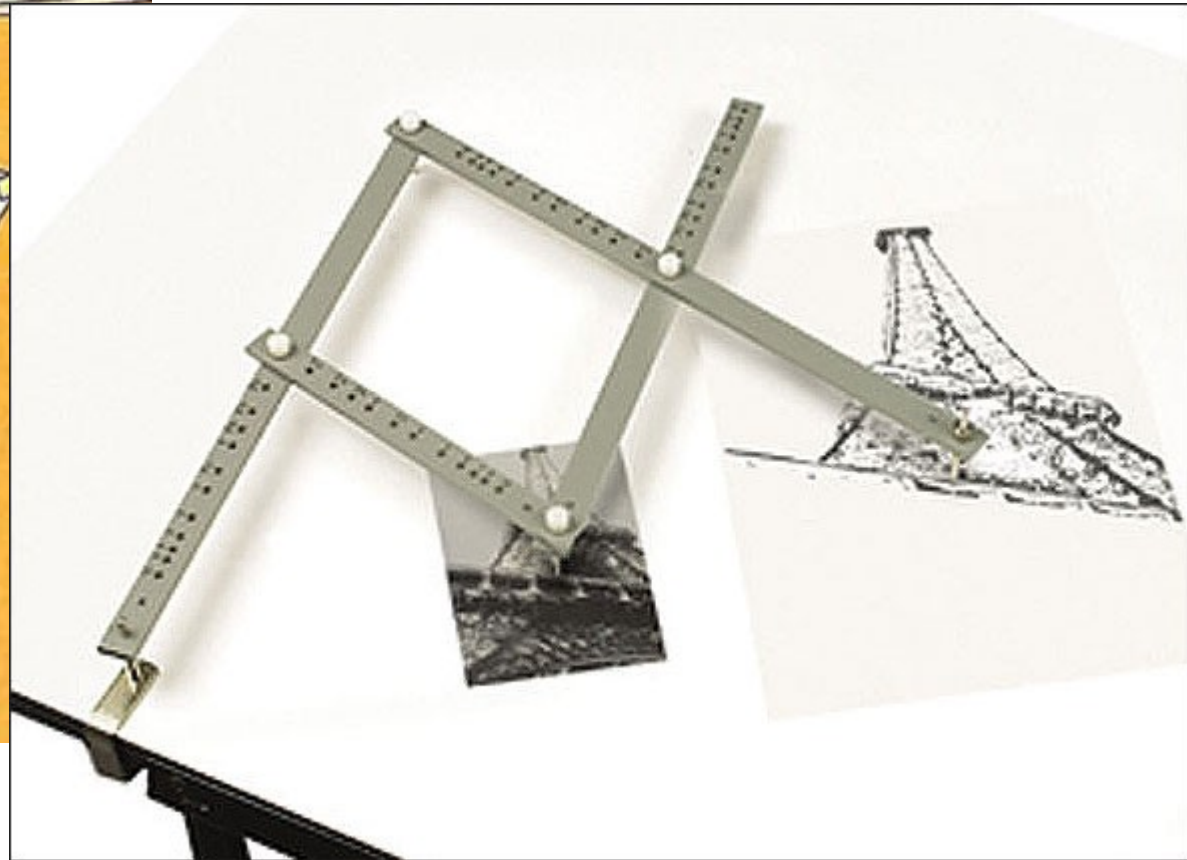
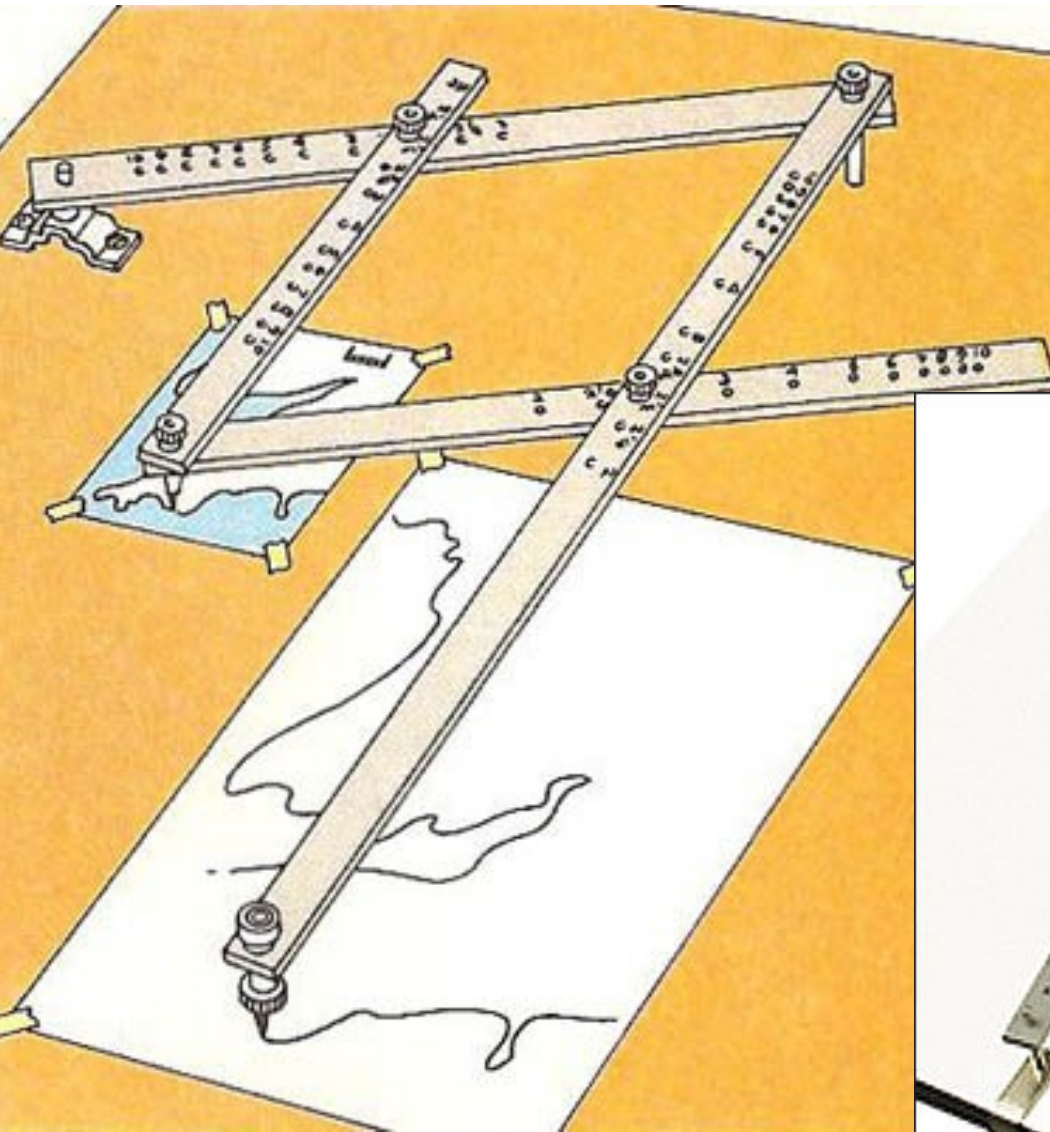
Four-Bar Linkage



This pair of locking pliers employs a four bar mechanism. The white dashed line connecting pins A, B, C and D traces the four links in the mechanism.



Pantograph



Backhoe



Four Bar Prosthetic Knee Joint

