

Electronics for IoT

DC Motor

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Many Types of Motors

- DC
 - Brushed
 - Brushless
- Steppers
- Servos

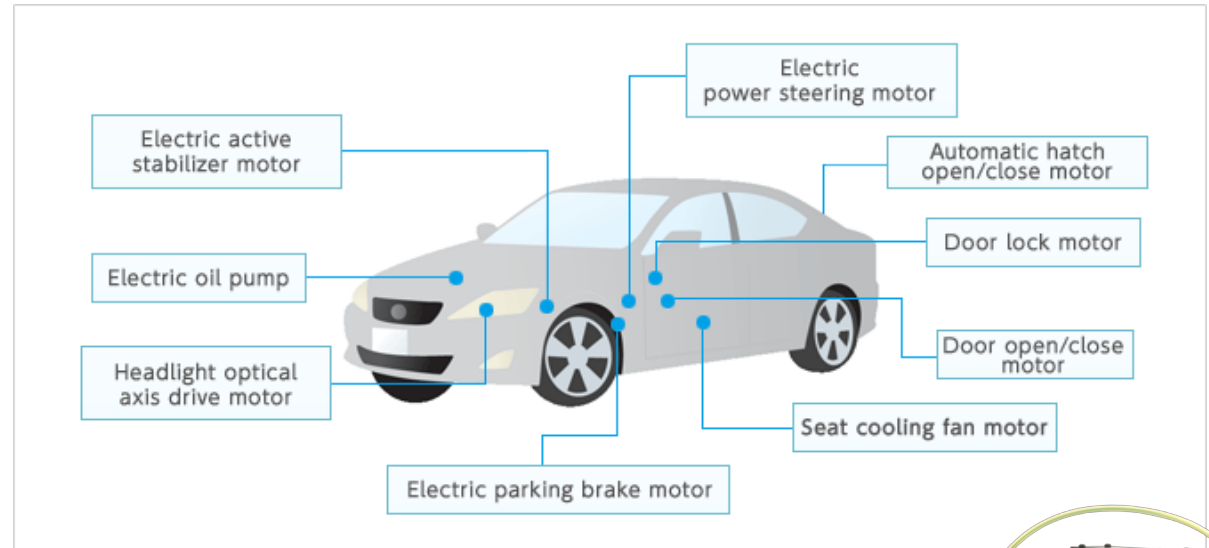


- Characteristics
 - Voltage, AC, DC
 - Torque
 - RPM
 - Size, power, ...

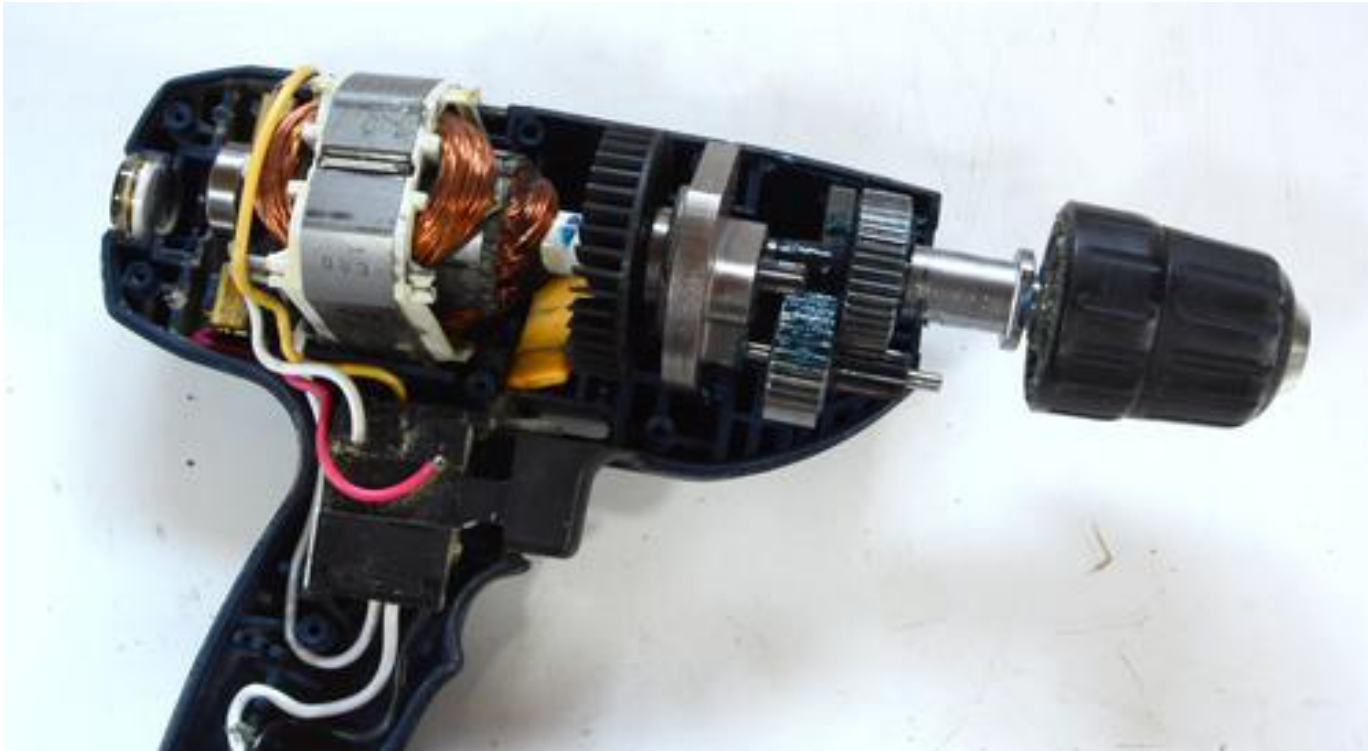


DC Motor Applications

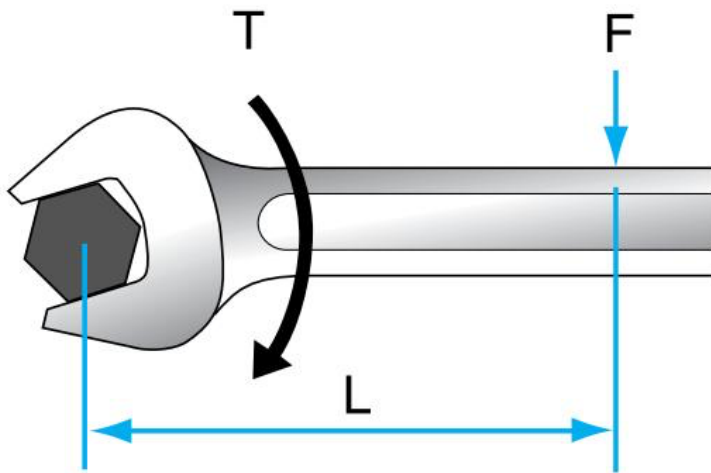
- Automotive
 - EV Drive Train
 - Turns wheels
 - Headlights
 - Windows
 - ...
- Aerospace
- Power Tools
- Robots
- Printers
- Fans
- AC



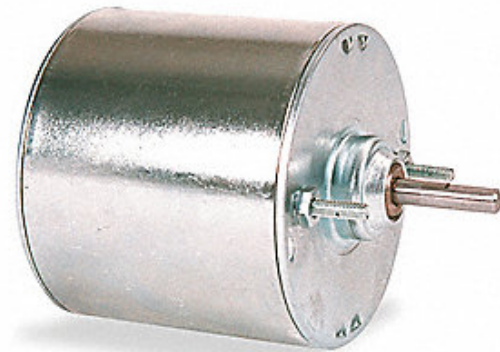
DC Motor Applications



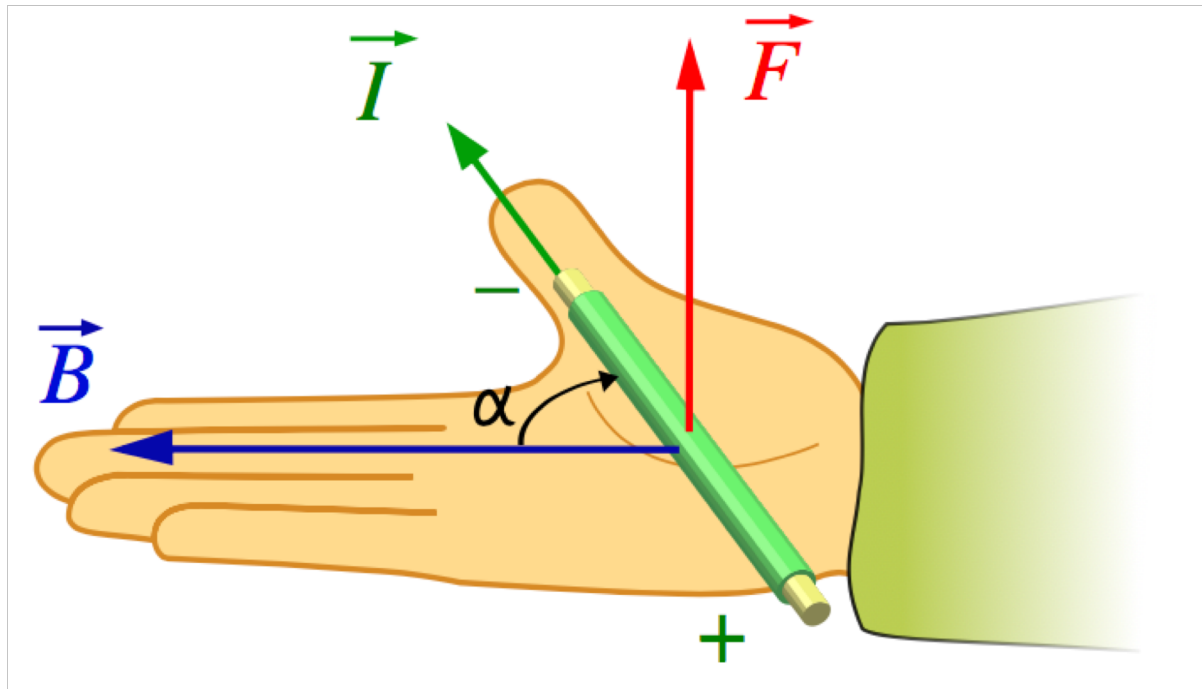
Torque



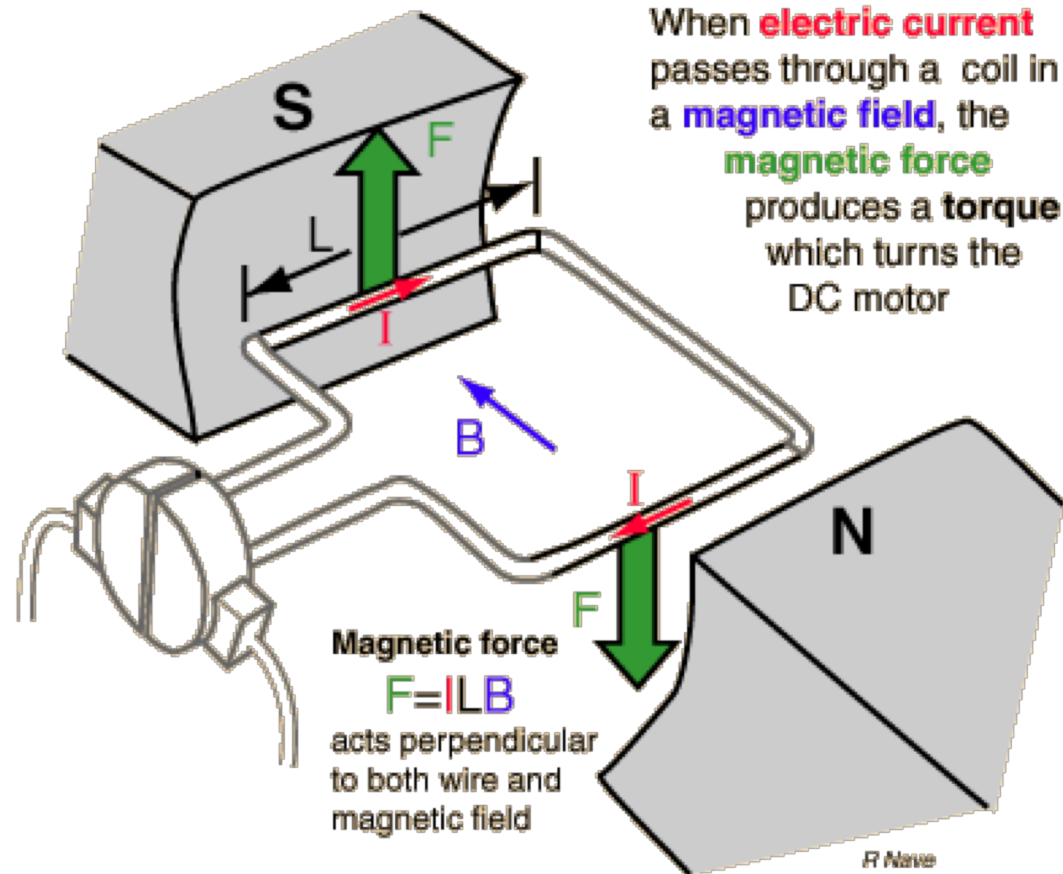
Torque $T = F$ (Force) \times L (Length)



Lorentz Force

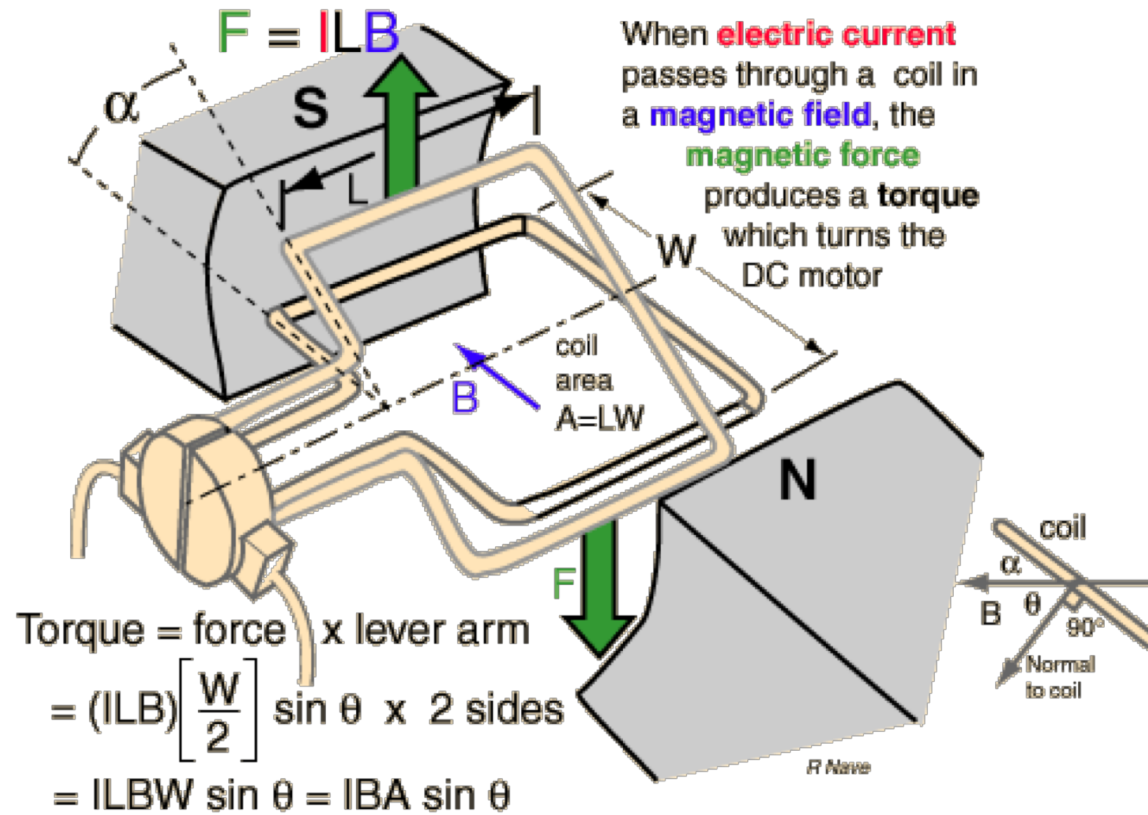


Electrical Motor Principle (1)



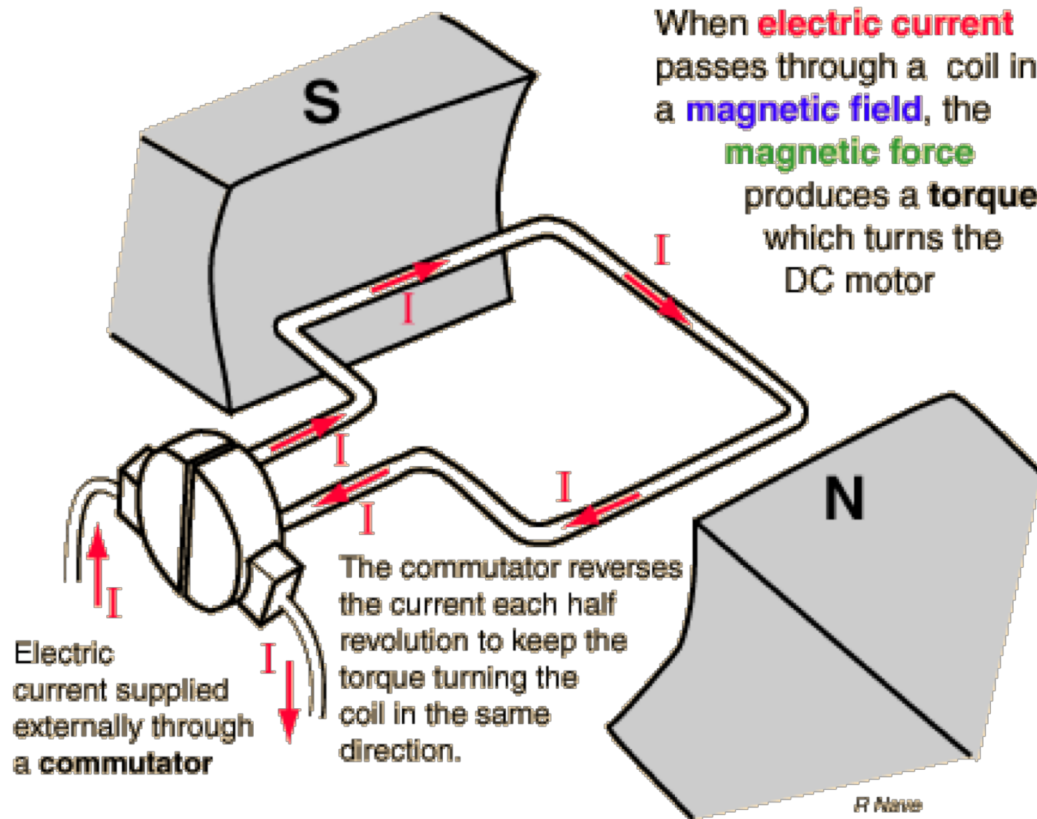
<https://www.pc-control.co.uk/dc-motors.htm>

Electrical Motor Principle (2)



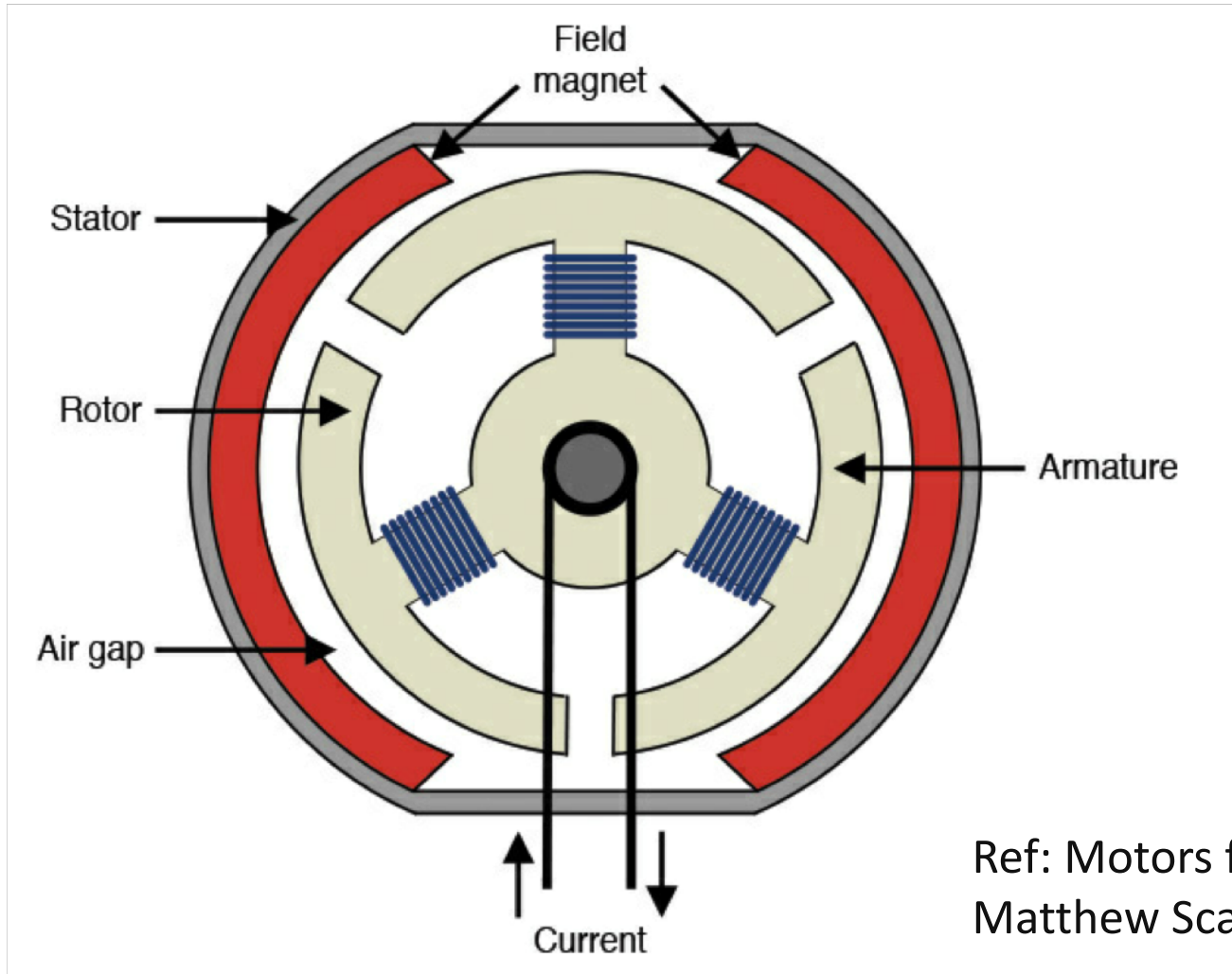
<https://www.pc-control.co.uk/dc-motors.htm>

Electrical Motor Principle (3)



<https://www.pc-control.co.uk/dc-motors.htm>

Motor Nomenclature

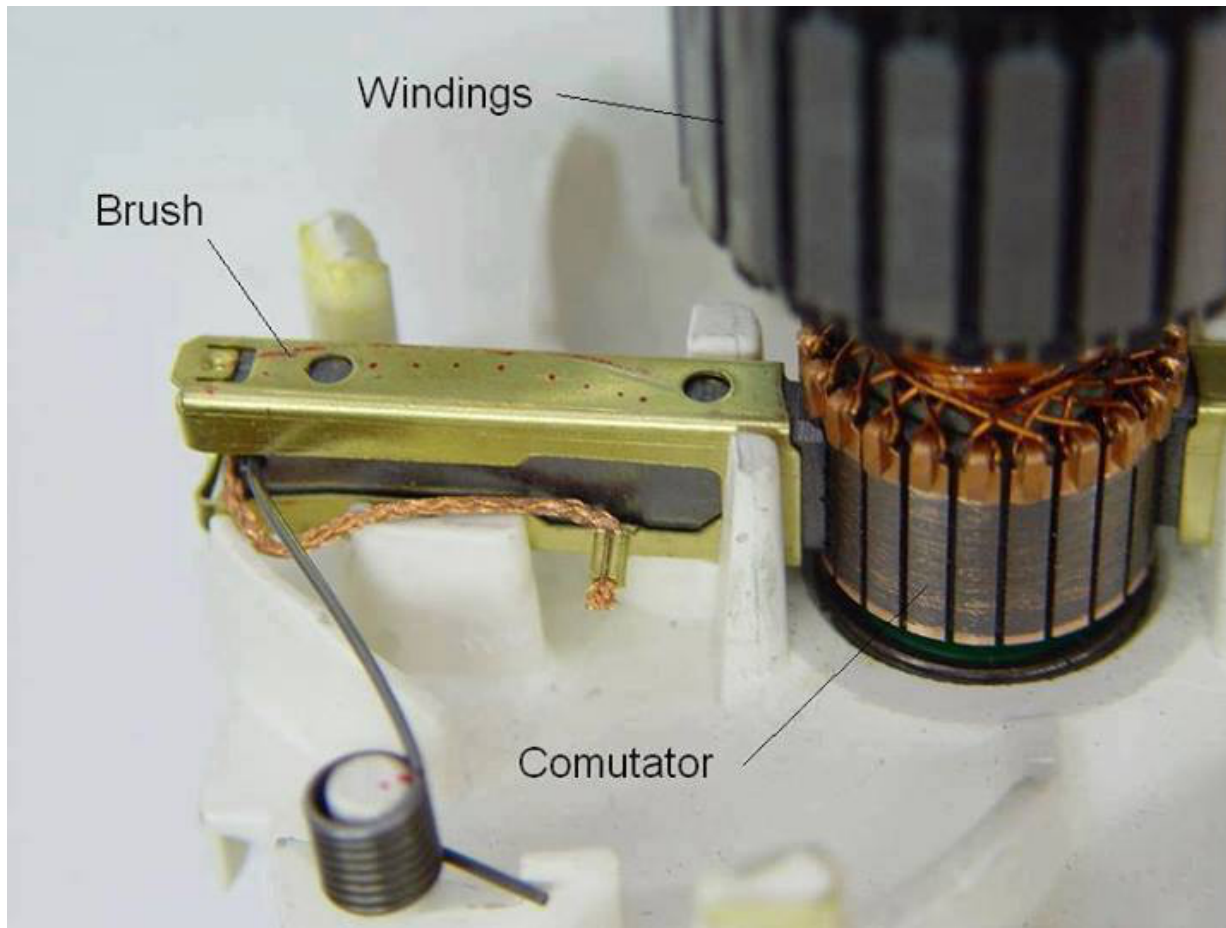


Ref: Motors for Makers,
Matthew Scarpino

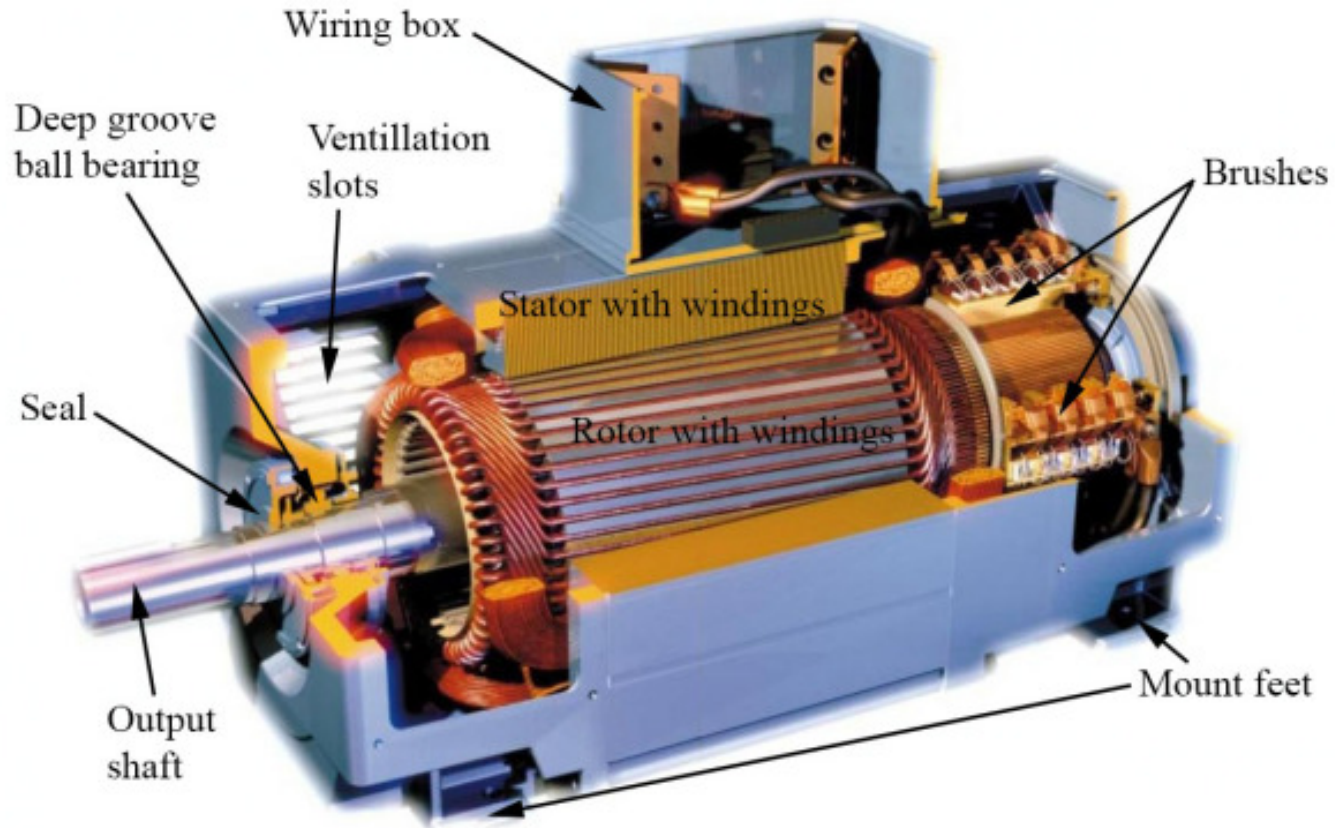
Winding



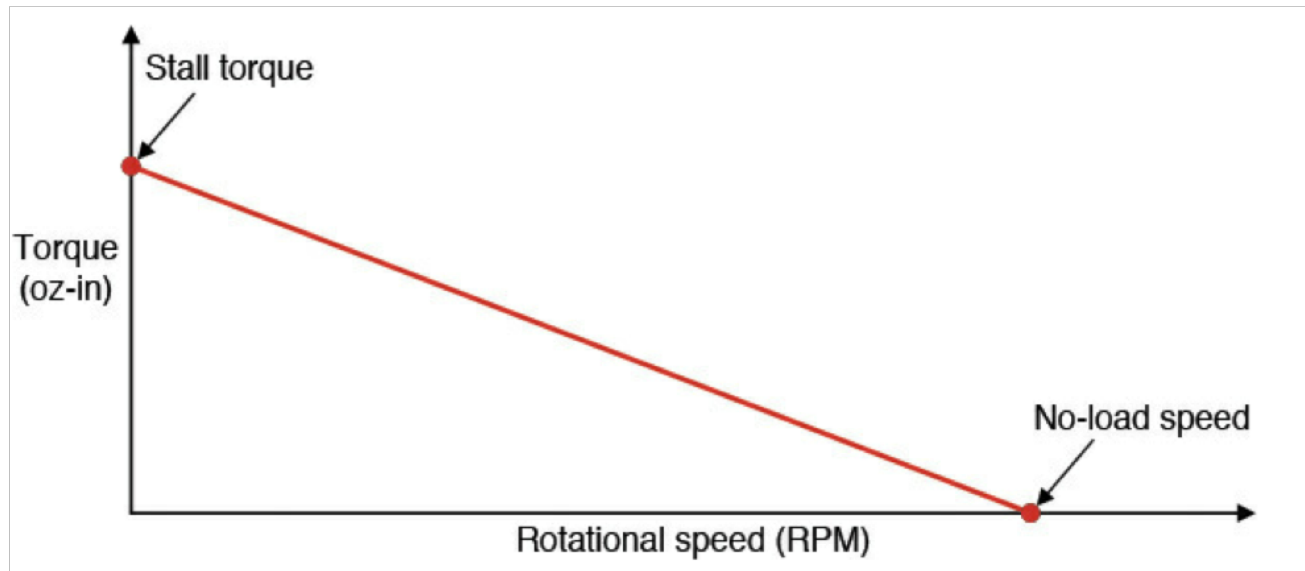
Commutator



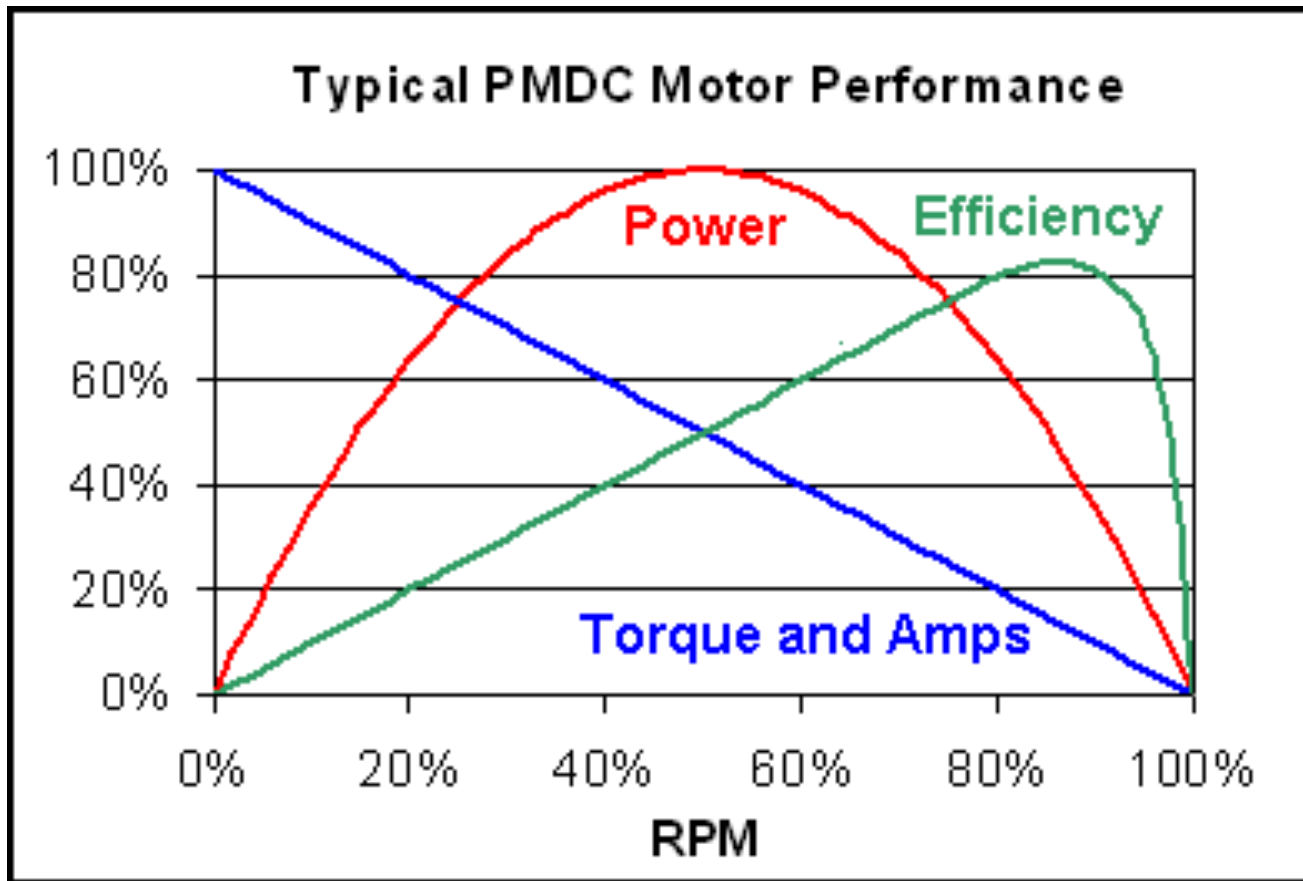
DC Motor



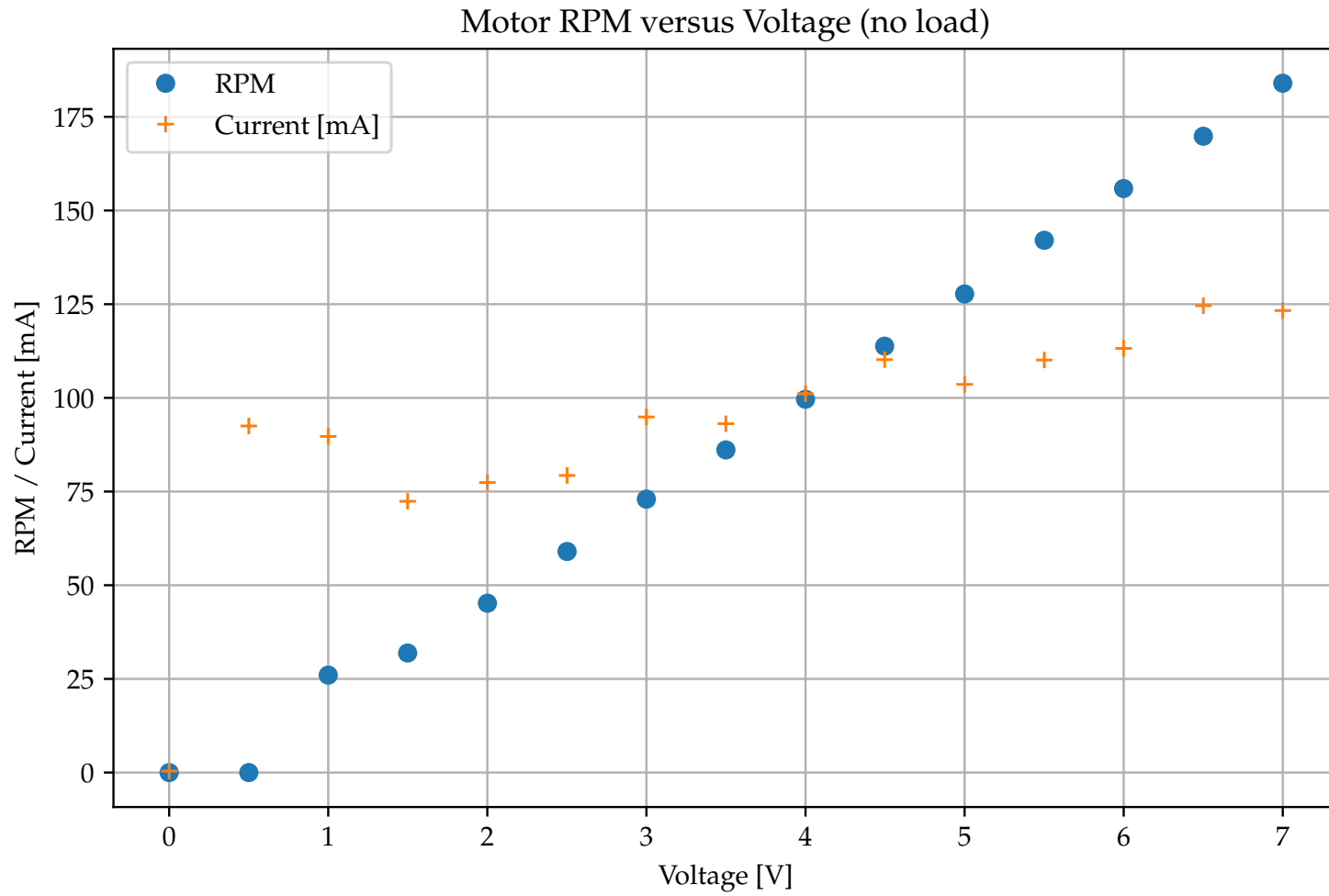
Torque τ vs Rotation Speed ω



Power vs ω



Speed Control



Gear Motors

