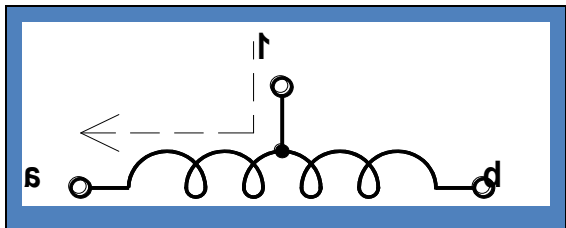
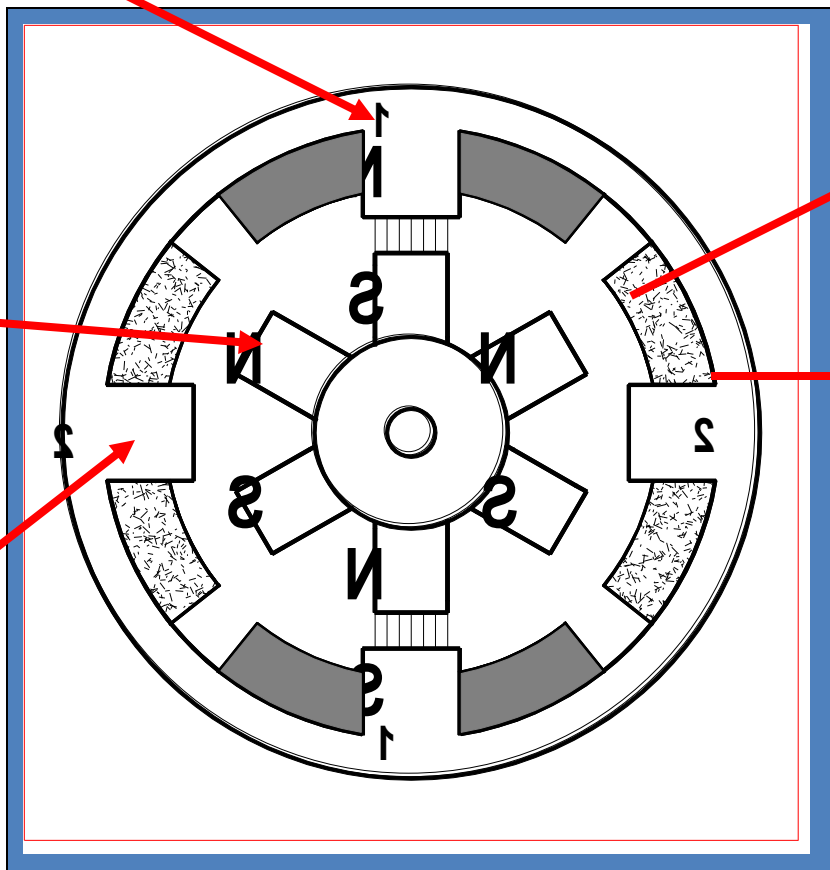


Special Electrical Machines

Winding number 1



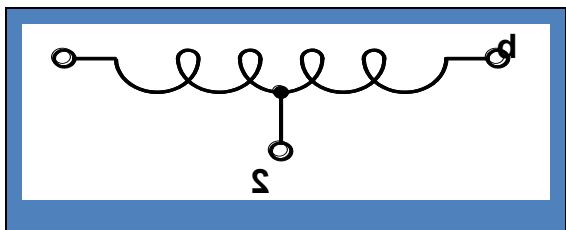
6 pole rotor

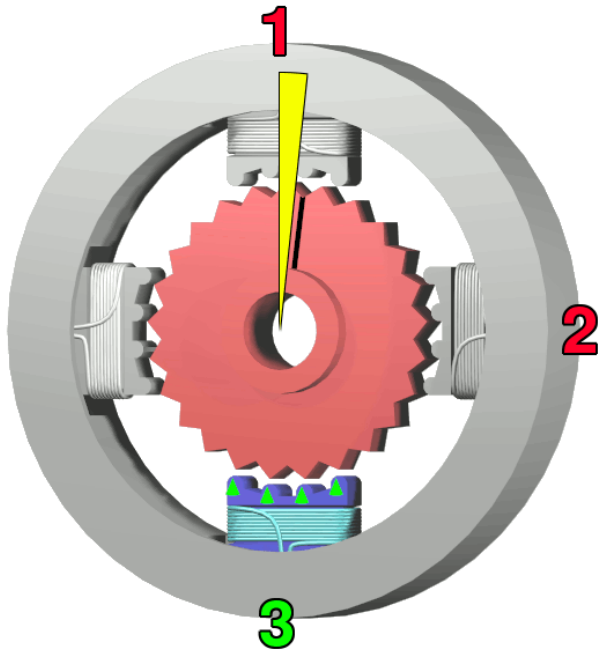


One step

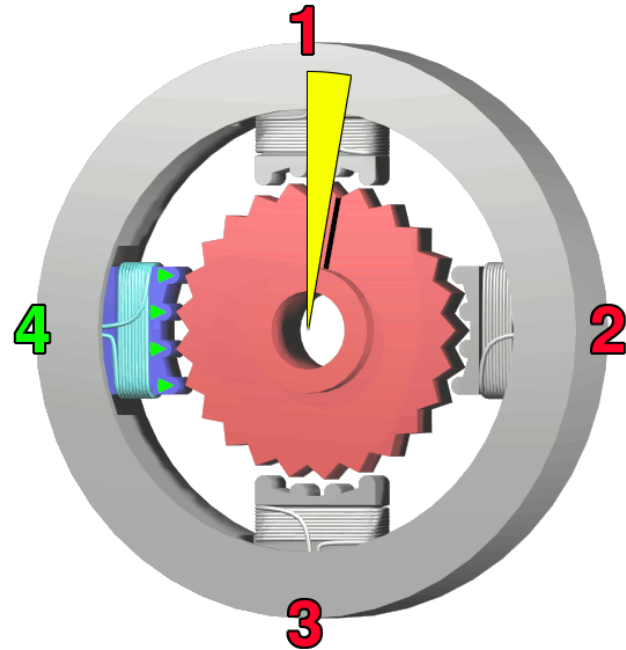


Winding number 2





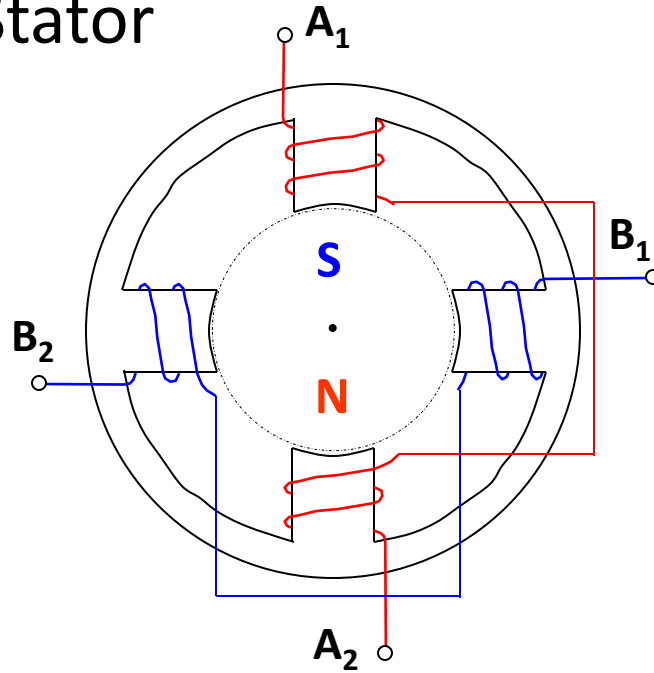
The bottom electromagnet (3) is energized; another 3.6° rotation occurs.



The left electromagnet (4) is enabled, rotating again by 3.6° . When the top electromagnet (1) is again enabled, the teeth in the sprocket will have rotated by one tooth position; since there are 25 teeth, it will take 100 steps to make a full rotation in this example.

Stepper Motor Operation - Full Step Mode

Rotor and Stator

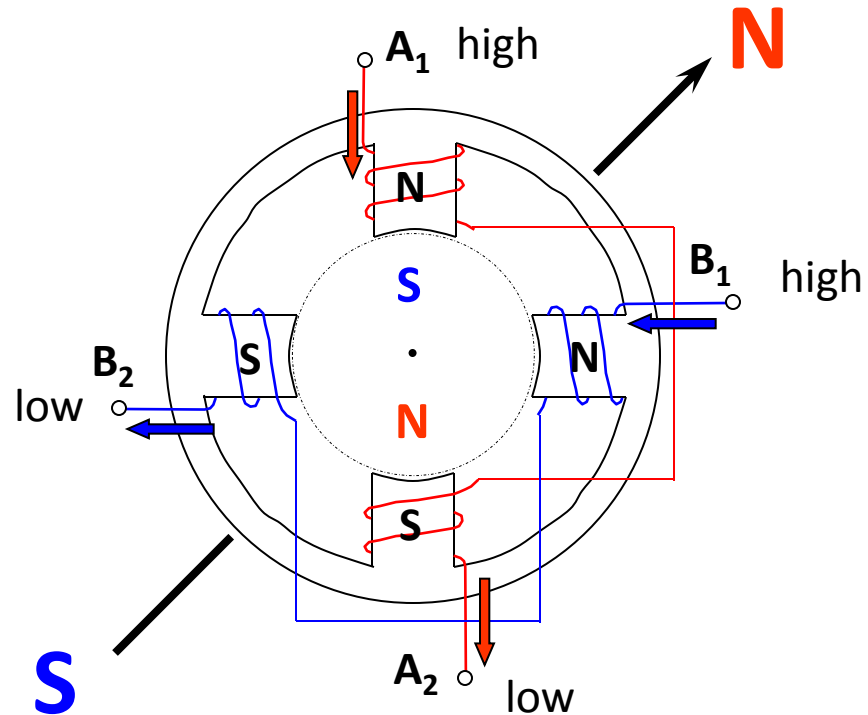


Stepper Motor Operation - Full Step Mode

Step 1a

Energize windings:

- A_1 and B_1 high
- A_2 and B_2 low

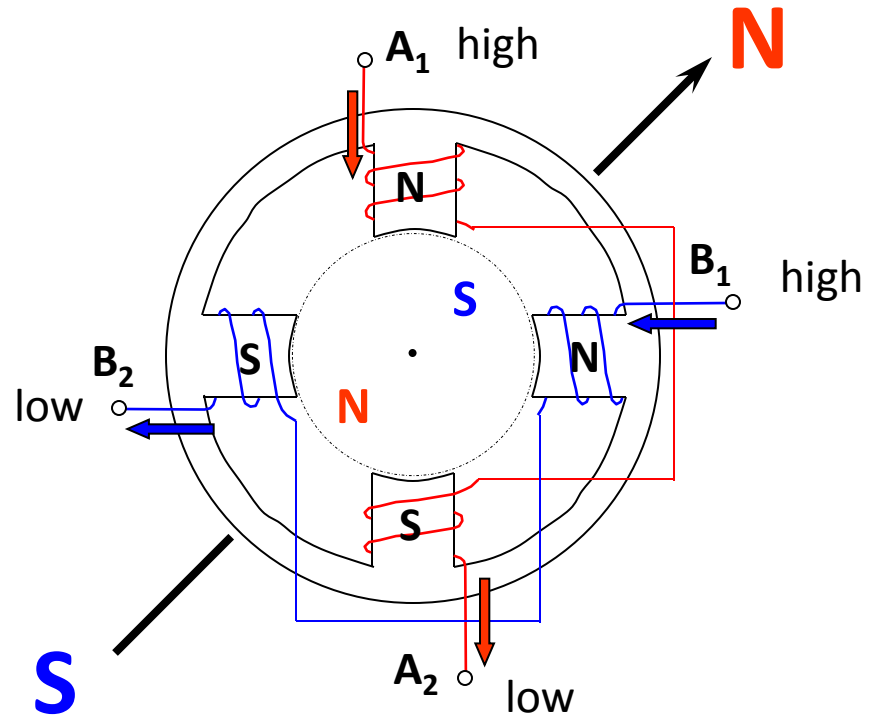


Stepper Motor Operation - Full Step Mode

Step 1b

Energize windings:

- Rotor moves to align with net magnetic field

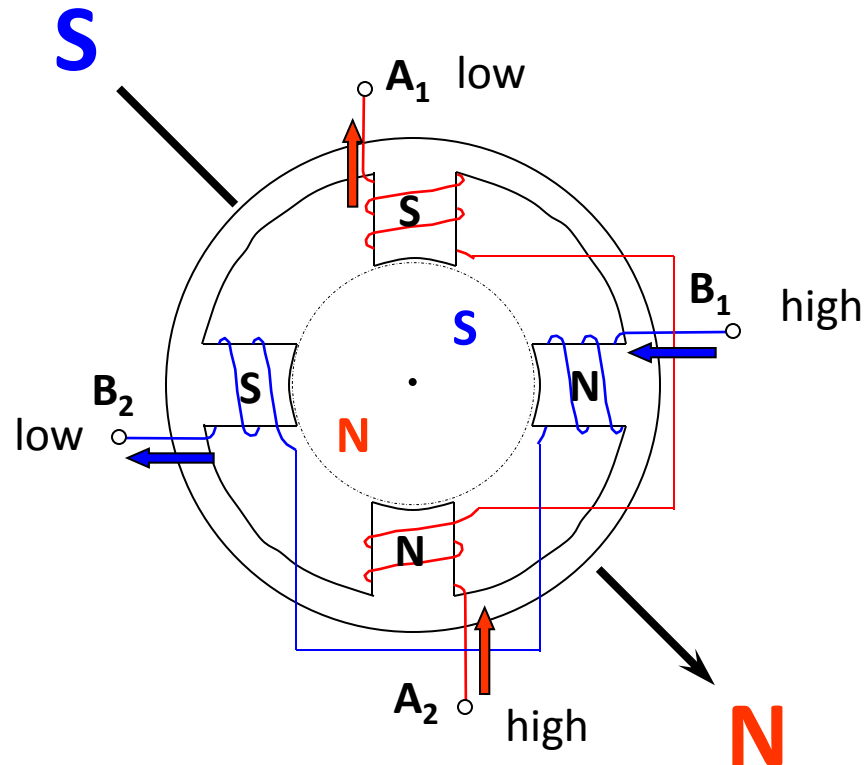


Stepper Motor Operation - Full Step Mode

Step 2a

Energize windings:

- A₂ and B₁ high
- A₁ and B₂ low

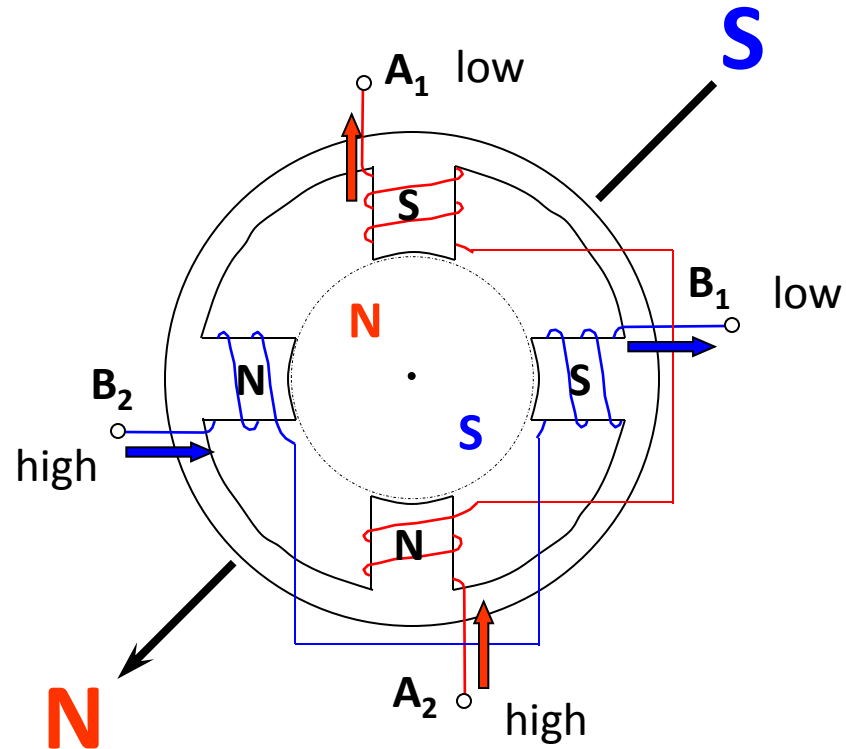


Stepper Motor Operation - Full Step Mode

Step 3a

Energize windings:

- A_2 and B_2 high
- A_1 and B_1 low

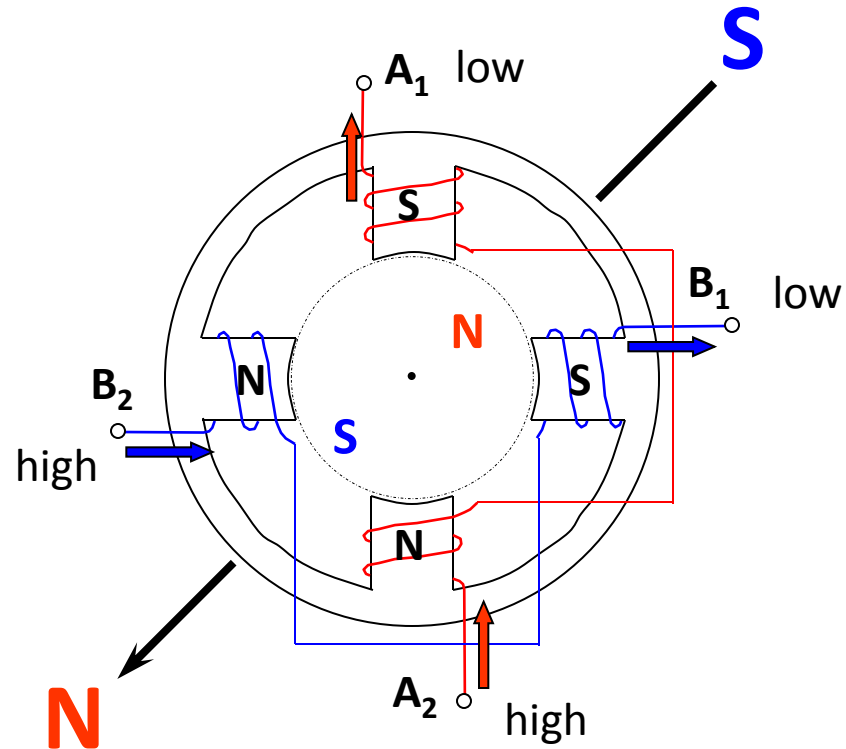


Stepper Motor Operation - Full Step Mode

Step 3b

Energize windings:

- Rotor moves to align with net magnetic field

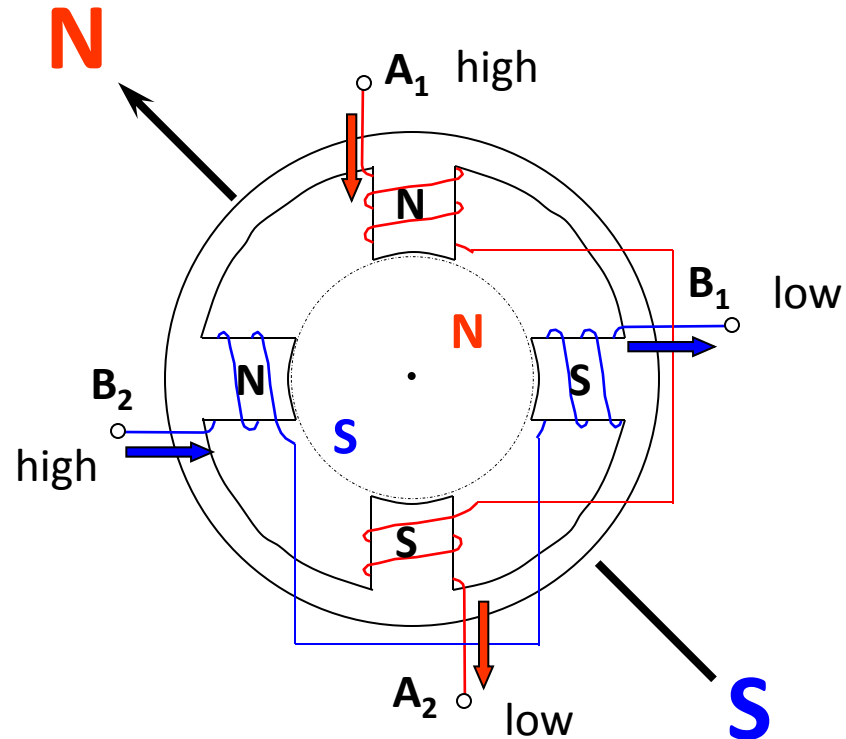


Stepper Motor Operation - Full Step Mode

Step 4a

Energize windings:

- A_1 and B_2 high
- A_2 and B_1 low

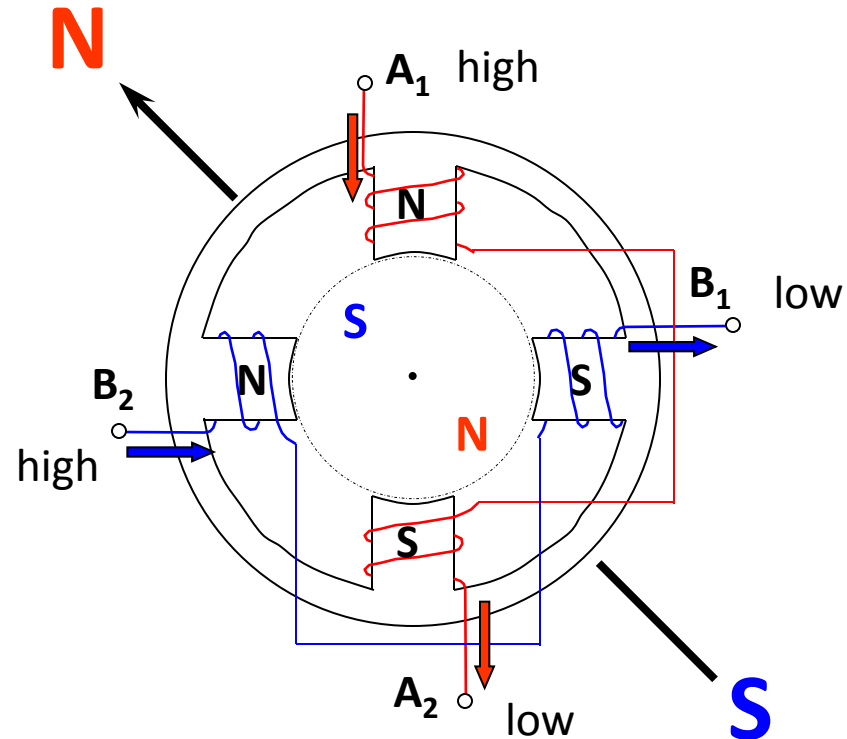


Stepper Motor Operation - Full Step Mode

Step 4b

Energize windings:

- Rotor moves to align with net magnetic field

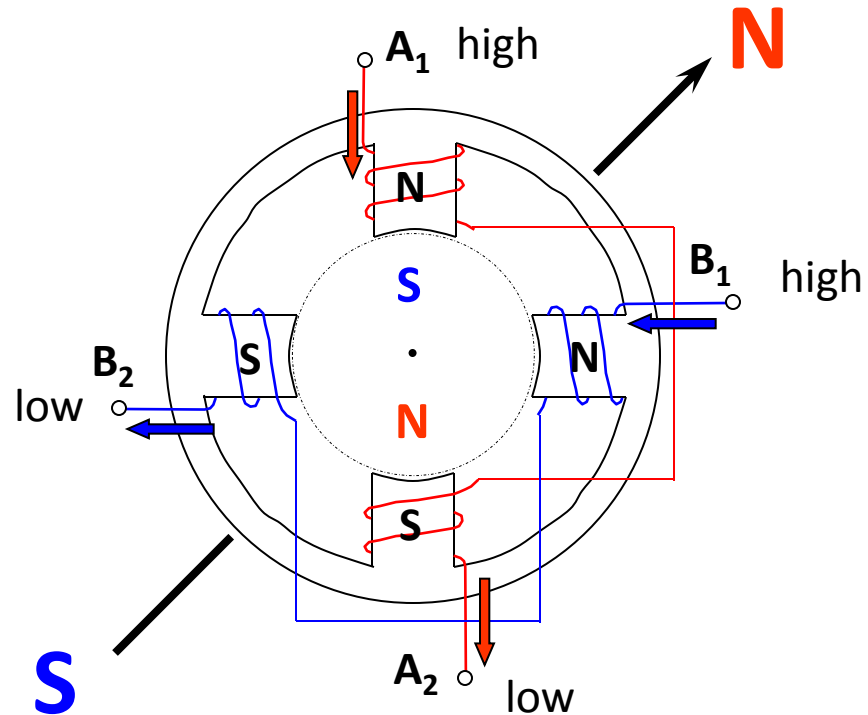


Stepper Motor Operation - Full Step Mode

Step 1a

Energize windings:

- A_1 and B_1 high
- A_2 and B_2 low

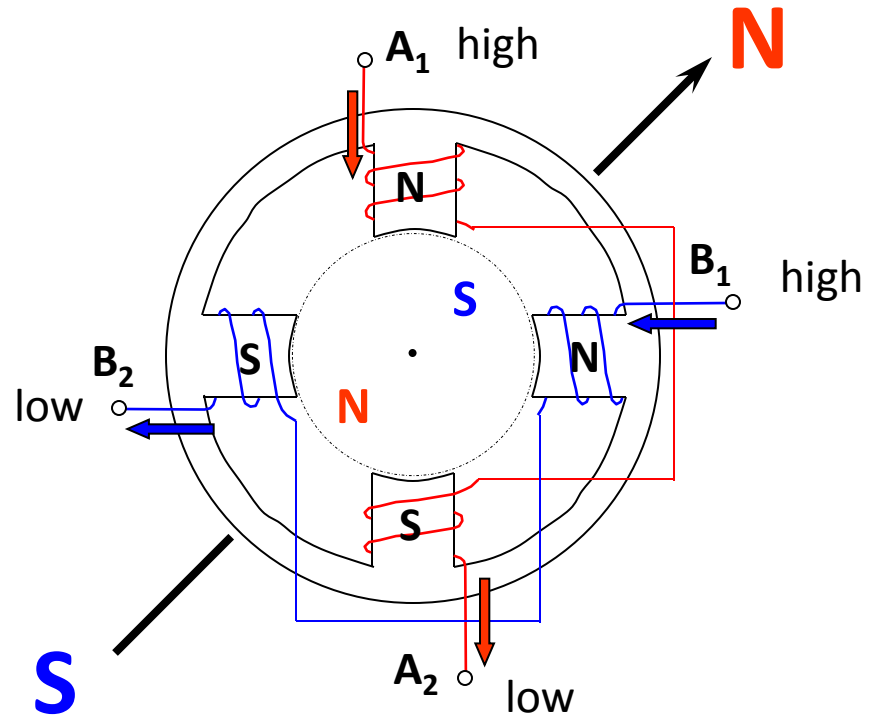


Stepper Motor Operation - Full Step Mode

Step 1b

Energize windings:

- Rotor moves to align with net magnetic field



THANKS....

Queries Please...