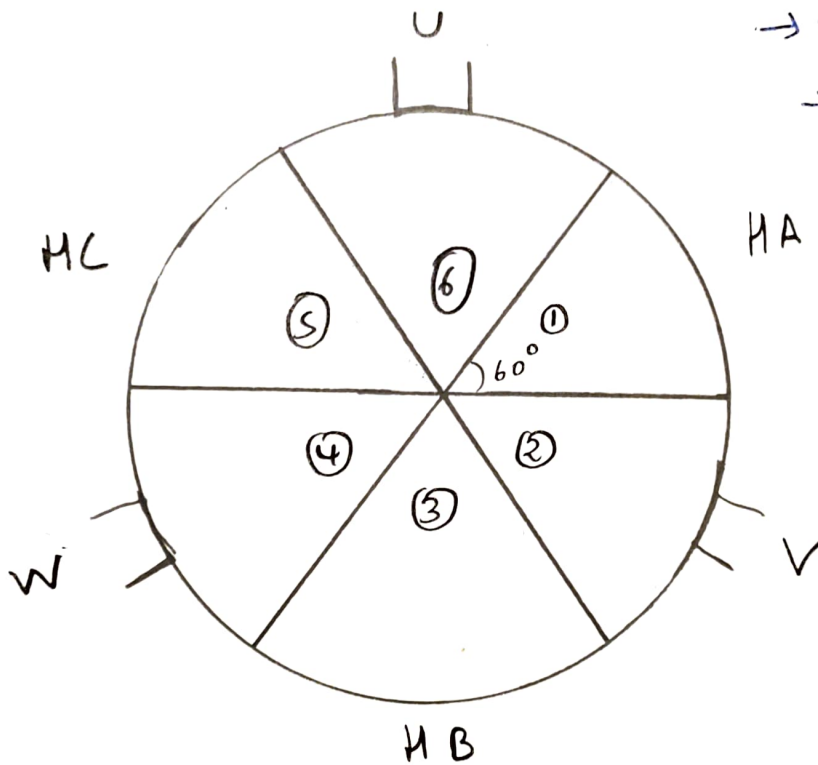


## 6-Step Commutation

- The BLDC motor is divided into 6 sectors.
- UVW Phases are placed  $120^\circ$  apart from each other.
- Hall effect sensor H1, H2, H3 are placed between UVW phases and all hall effect sensors are  $120^\circ$  apart from each other.



- Each sector of  $60^\circ$
- Motor Phases are  $120^\circ$  apart from each other
- Hall effect sensors are also placed  $120^\circ$  apart from each other.

## \* Important Points

### ① Phases

- current enters a phase winding → That phase becomes south
- current leaves a phase winding → That phase becomes north

## ② Hall effect sensor

Rotor Pole

North

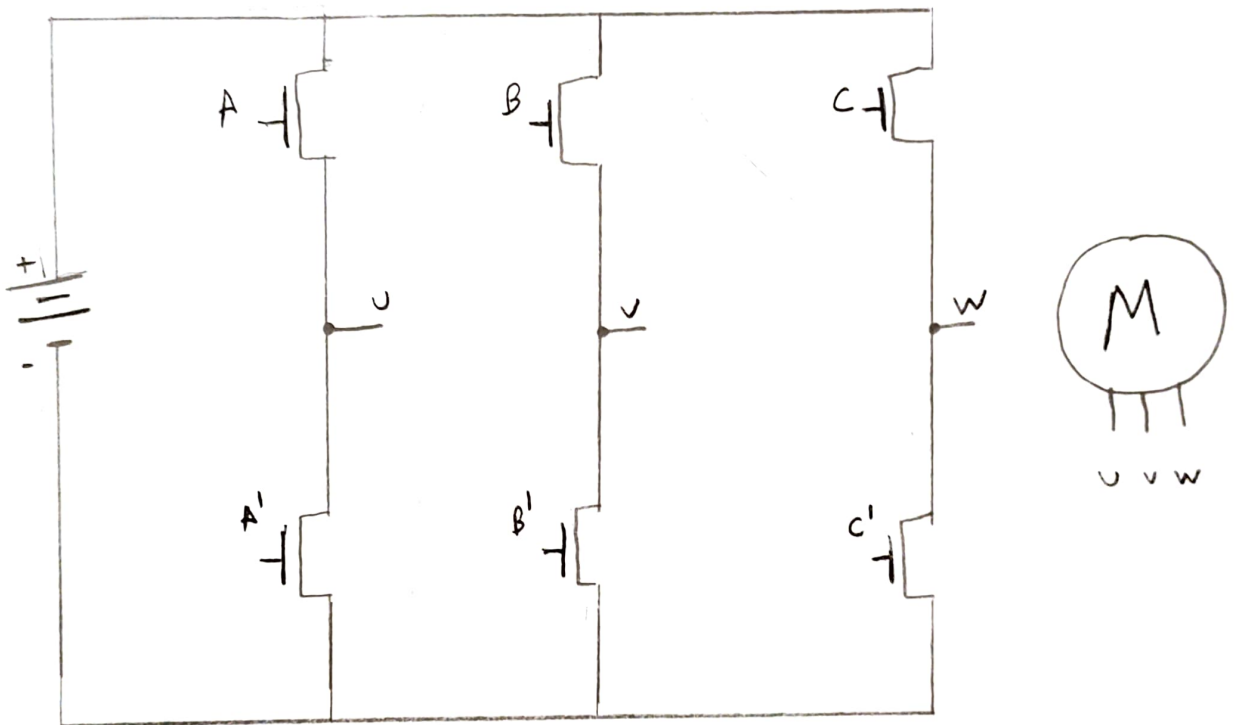
South

Hall effect sensor output

High

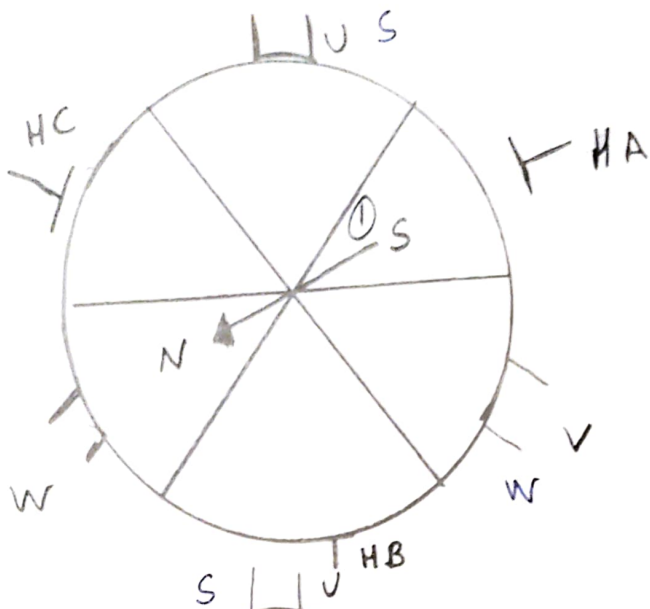
Low

## \* 3Phase Bridge



## \* Commutation

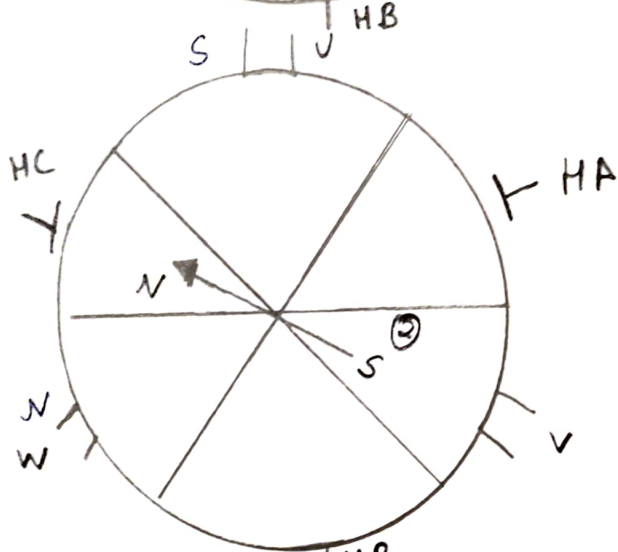
Sector	Hall sensor			Phase A		Phase B		Phase C	
	HA	HB	HC	A	A'	B	B'	C	C'
1	0	1	1	1	0	0	1	X	X
2	0	0	1	1	0	X	X	0	1
3	1	0	1	-	-	1	0	0	1
4	1	0	0	0	1	1	0	X	X
5	1	1	0	0	1	X	X	1	0
6	0	1	0	-	-	0	1	1	0



### Sector 1

~~H3 H2 H1~~  
 HA HB HC  
 0 1 1

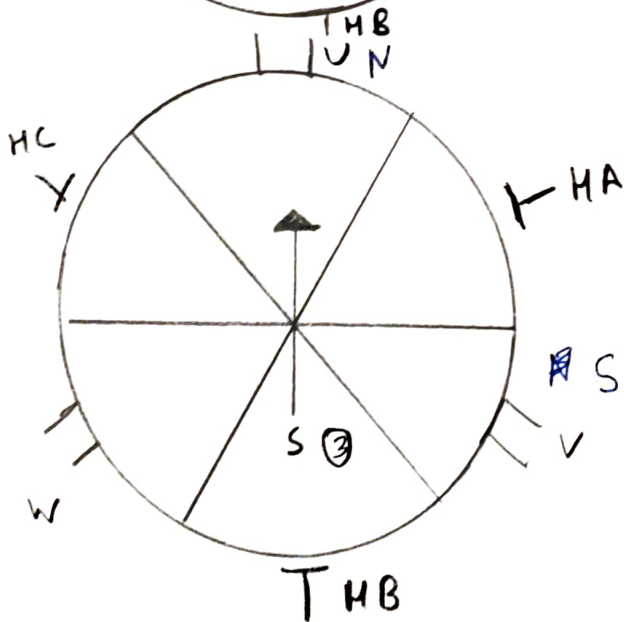
U V W  
 H L X  
 S N



### Sector 2

HA HB HC  
 0 0 1

U V W  
 H X L  
 S N (Pole)



### Sector 3

HA HB HC  
 1 0 1

U V W  
 X H L  
 S N

