DC GENERATOR

Part 5 Note

ENTRI

Armature Reaction

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Armature Reaction

- Effect of magnetic field set up by armature current on the distribution of main flux produced by main pole.

  Mainly Two Types

- 1) de magnetizing or weakens the main flux

  After effect : reduction of generating voltage

- 2) cross magnetizing or distortion of main flux

  After effect : sparking at the brushes

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MNA

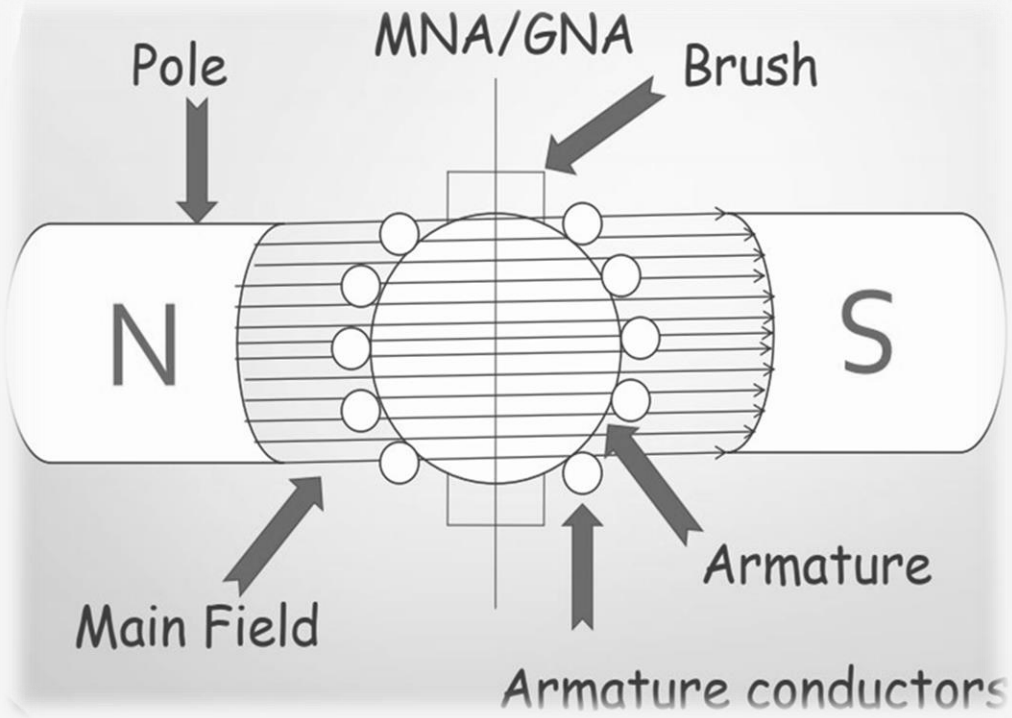
- Magnetic Neutral Axis
- axis along which no emf is induced in the armature conductor because they move parallel to line of flux
- Brushes are always placed M.N.A
- M.N.A is also called axis of commutation, reversal of current in armature conductor takes place.

GNA

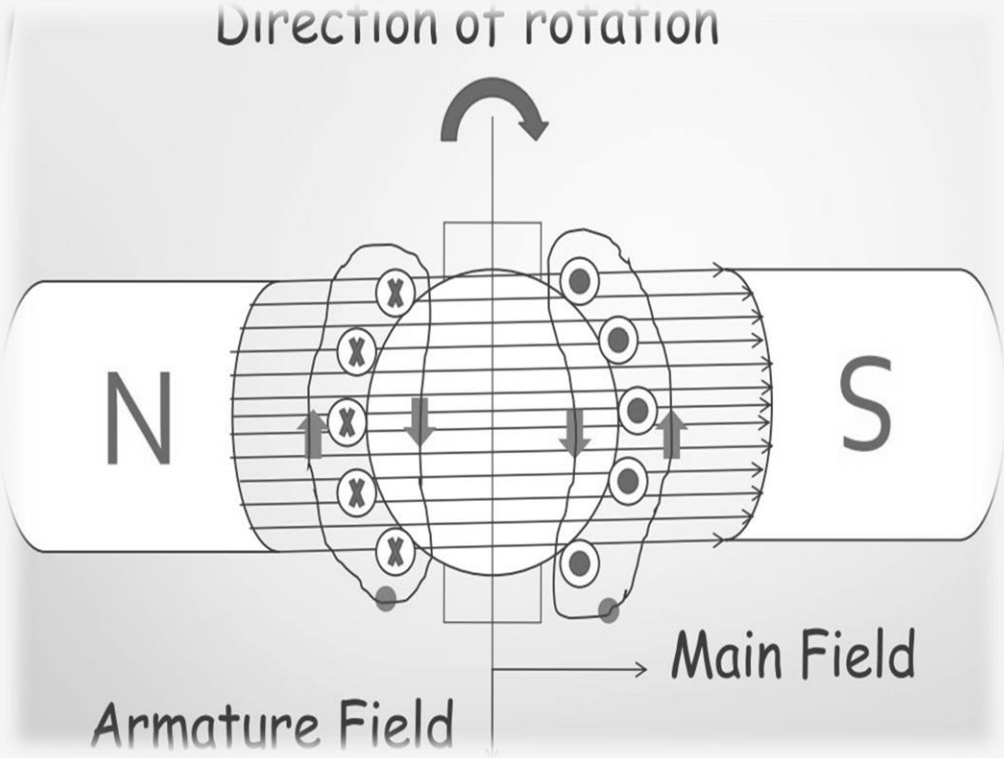
- Geometrical Neutral Axis
- It is the axis which divides the armature core in two equal parts.

Polar Axis

- It is the imaginary line which joins the center of NS poles.



- Now assume that there is current flowing through the armature conductors
- Direction of rotation is clock-wise.
- According to Fleming’s right-hand rule,
- The direction of current is inwards in conductors which are influence of N pole Outwards which are influence of S pole.
- Inward flow of current is represented by “cross ” whereas the outward flow is represented by “ dot” .
- Direction of flux produced by armature conductor can be found right hand palm rule.



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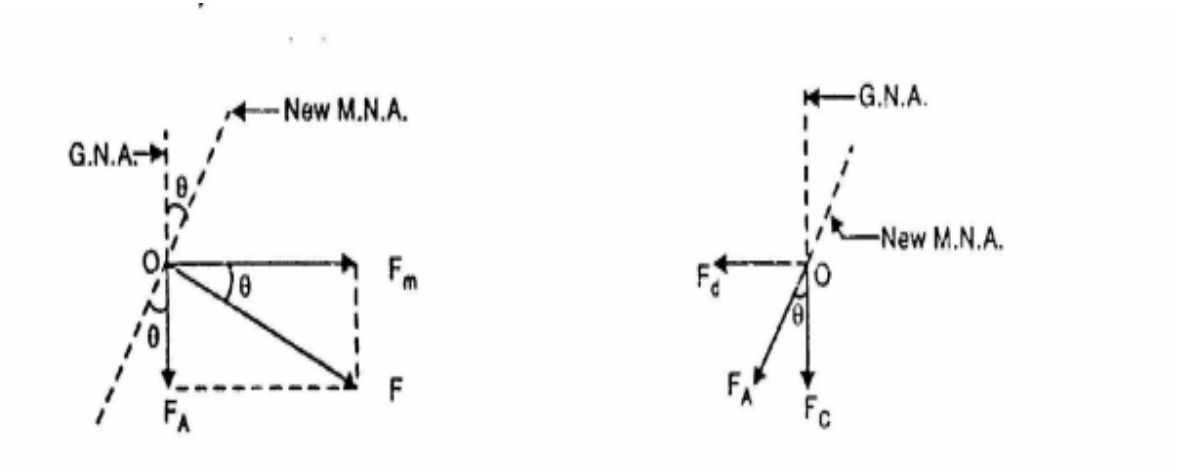
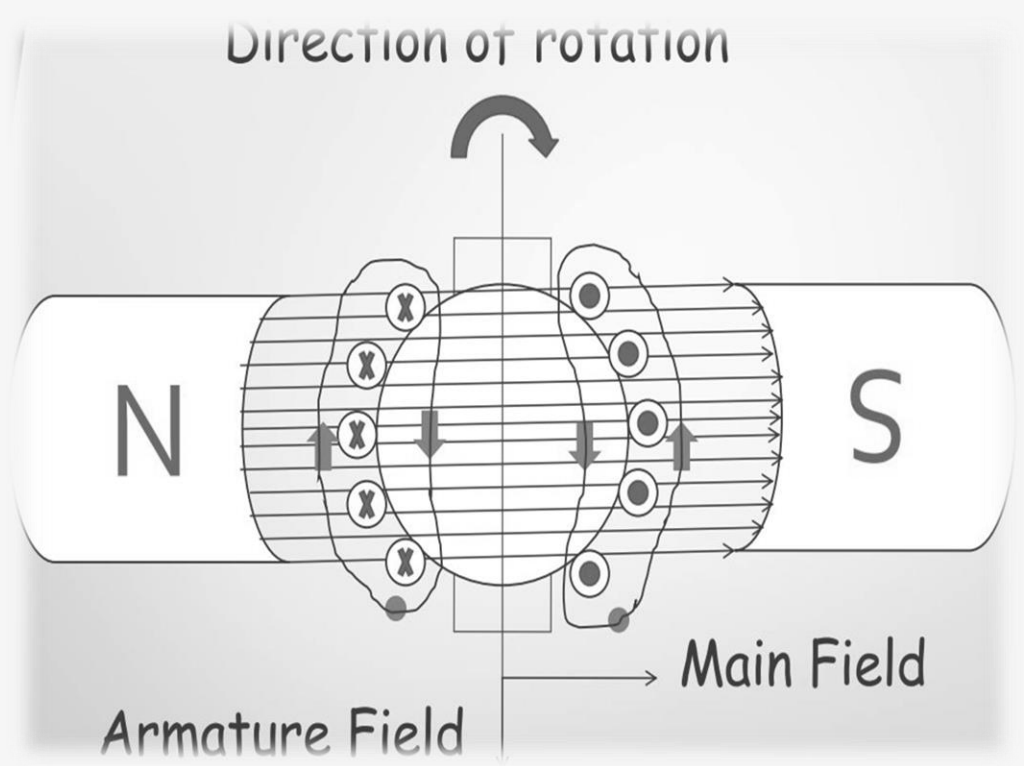
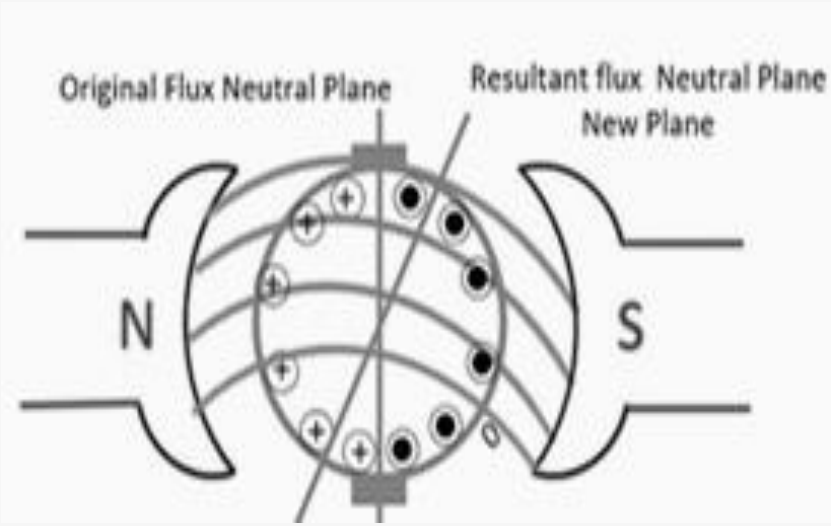
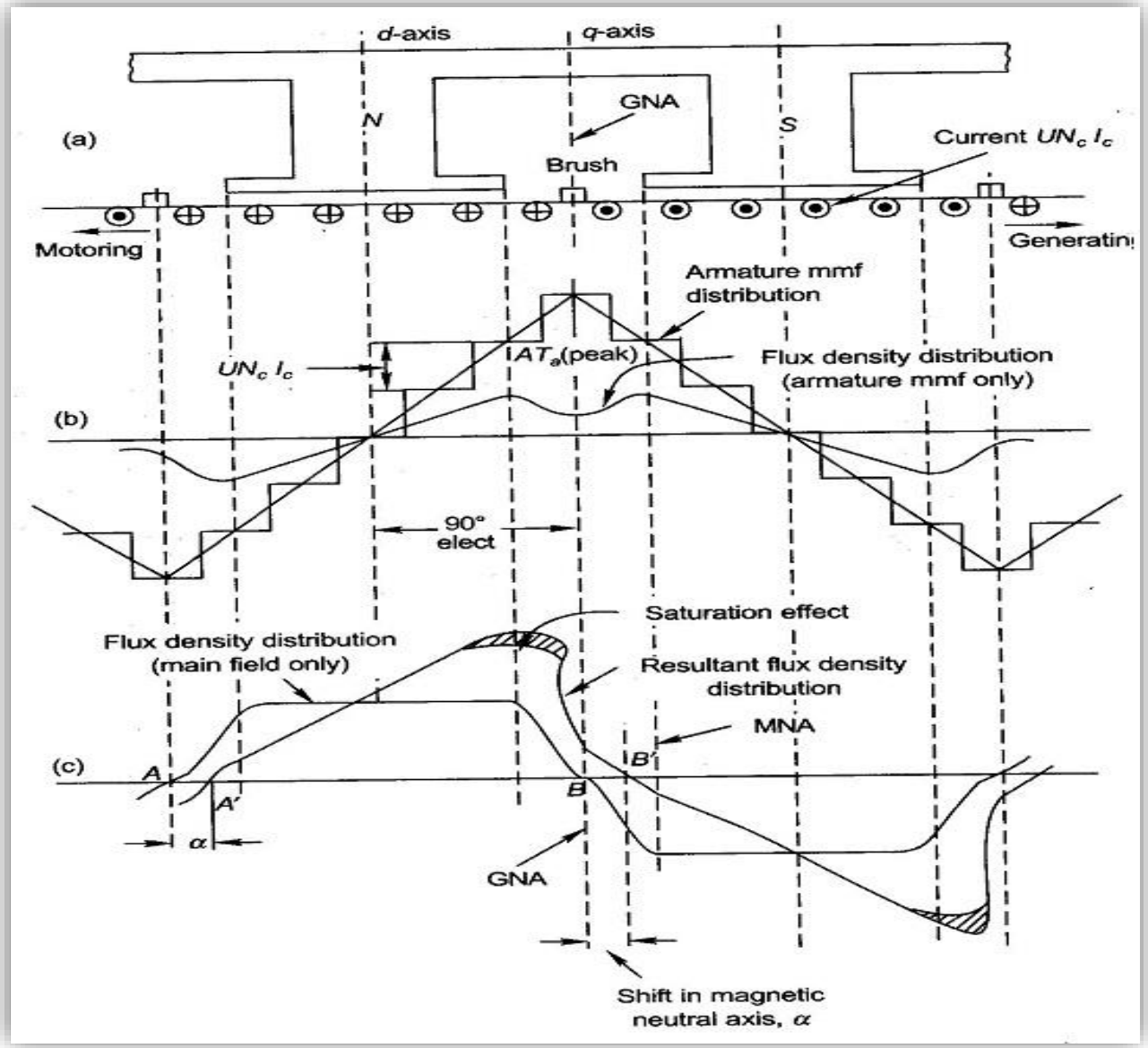
- Leading pole tip : pole tip which is first met during rotation by armature conductor.
- Trailing pole tip : pole tip which is last met during rotation by armature conductor.

- Crowded at Trailing pole Tips
- Weakened at leading pole Tips
- Brush position shift in the same direction of direction of rotation.









Shape of Armature MMF in air gap = Triangular

Shape of main field MMF and flux = Trapezoidal