



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



COIMBATORE-35

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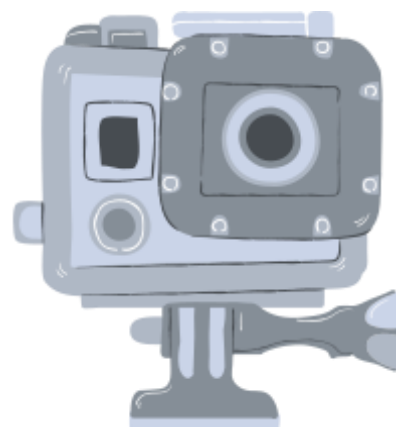
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

**COURSE NAME: 19EET207/ SYNCHRONOUS AND INDUCTION
MACHINES**

II YEAR / IV SEMESTER

Unit 5 – SPECIAL MACHINES

Topic 5: Repulsion motor





GUESS THE TOPIC NAME...



- Introduction
- Construction of repulsion motor
- Working principle
- Types of repulsion motor
- Advantages of repulsion motor
- Disadvantage of repulsion motor
- Application of repulsion motor



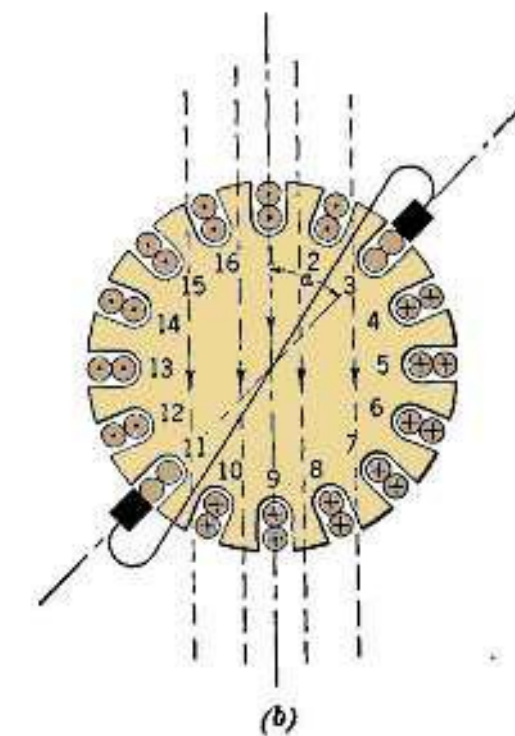
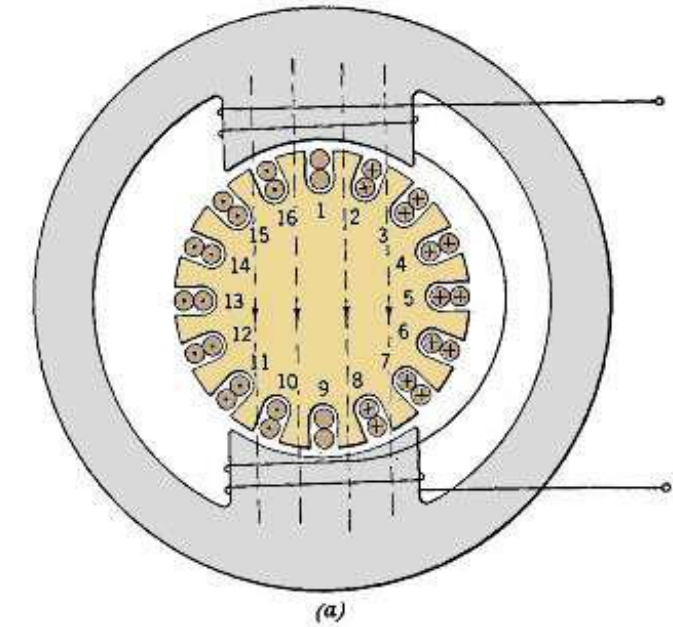
Repulsion motor

- Repulsion motors are classified under single phase motors.
- In magnetic repulsion motors the stator windings are connected directly to the ac power supply and rotor is connected to commutator and brush assembly , very similar to that of DC armature.



CONSTRUCTION OF REPULSION MOTOR

- The repulsion motor has operating characteristics similar to those of the series DC motor.
- It has a stator with a winding similar to that of a split-phase motor without the starting winding.
- The rotor is similar to the armature of a DC motor, but it has no electrical connection to the supply line. The brushes are short-circuit.





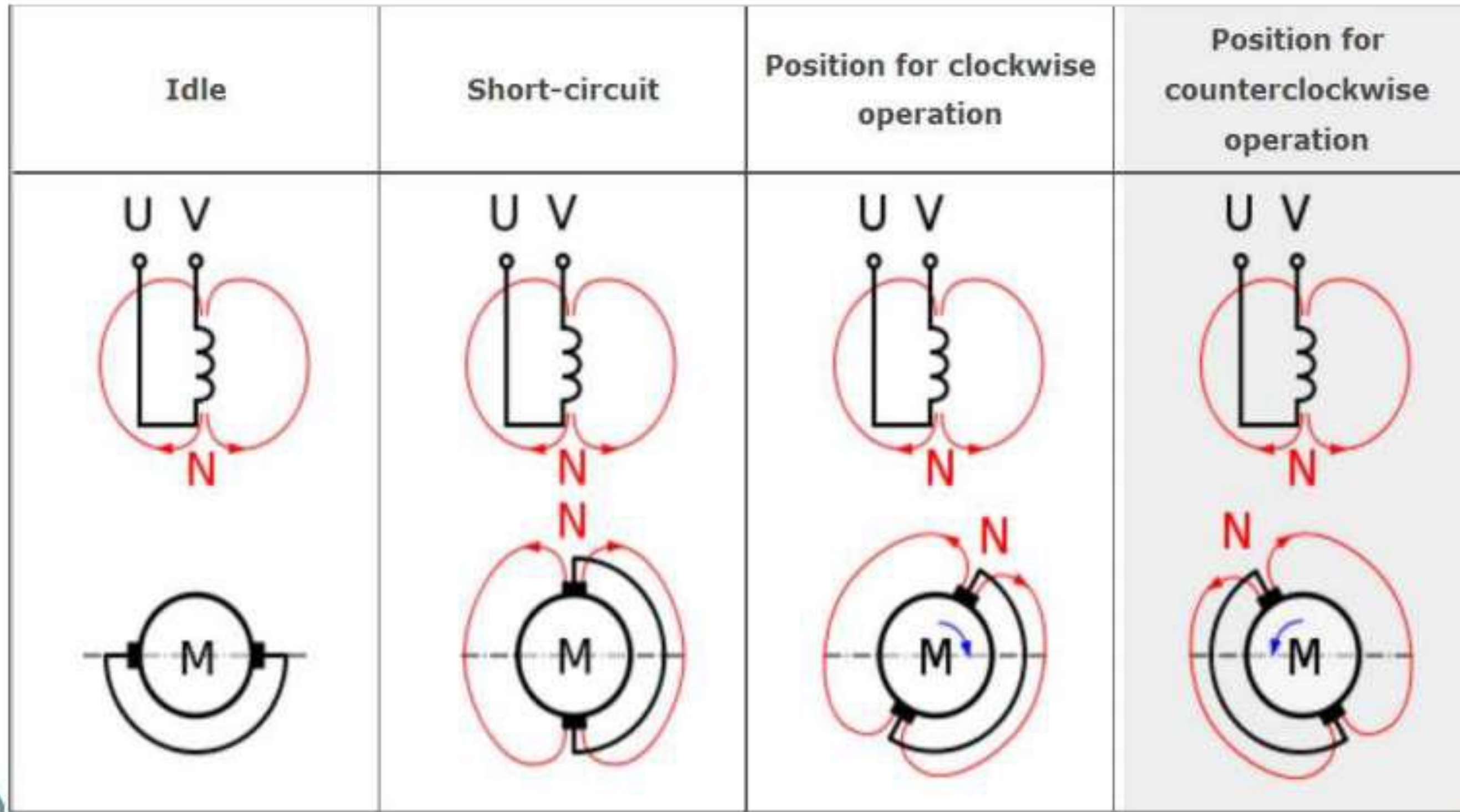
WORKING PRINCIPLE



- Repulsion motors are based on the principle of repulsion between two magnetic fields.
- Consider a 2-pole motor with a vertical magnetic axis.
- The armature is connected to a commutator and brushes.
- The brushes are short circuited using a low resistance jumper.
- When alternating current is supplied to the field (stator) winding, it induces an electromotive force (emf) in the armature.
- The direction of alternating current is such that it creates a north pole at the top and a south pole at the bottom.
- The direction of induced emf is given by Lenz's law
- The induced e.m.f induces current in the armature conductors and the direction of the induced current depends on the position of the brushes.



CIRCUIT DIAGRAM OF REPULSION MOTOR





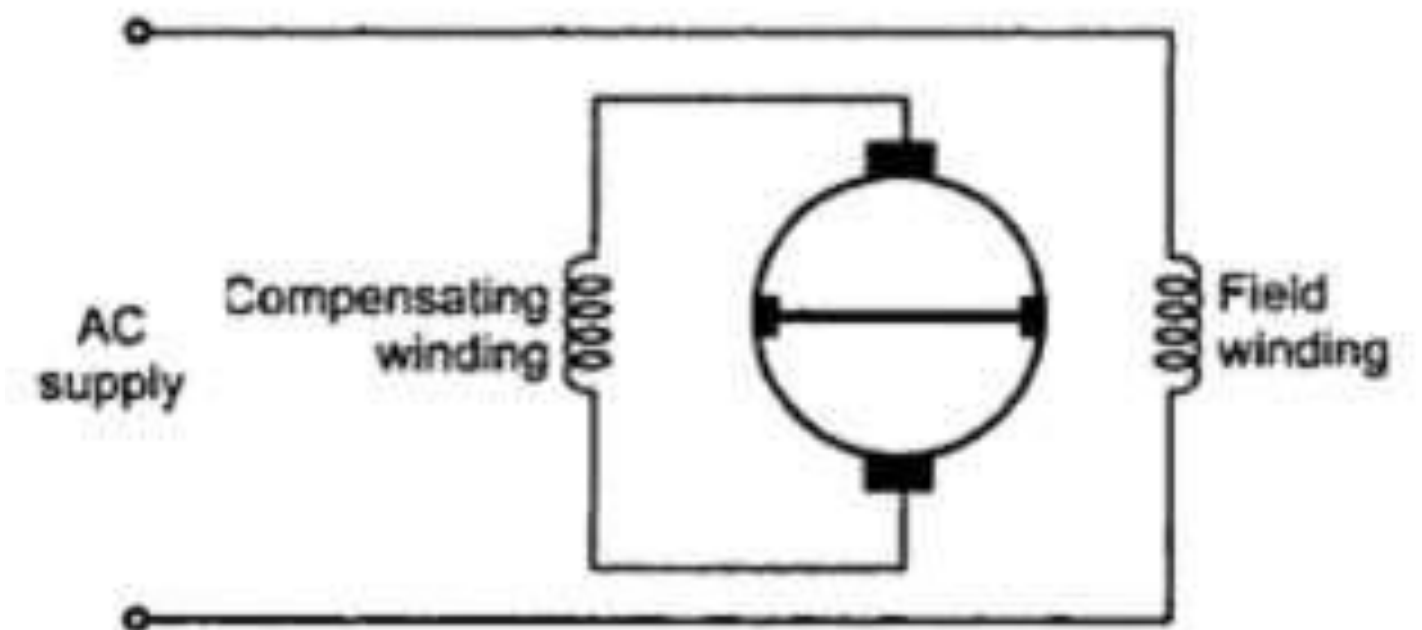
TYPES OF REPULSION MOTOR

- COMPENSATED REPULSION MOTOR
- REPULSION-START INDUCTION MOTOR
- REPULSION INDUCTION MOTOR

COMPENSATED REPULSION MOTOR

It carries an additional winding, called compensating winding. There is another set of two brushes which are placed midway between the usual short circuit brush set.

The compensating winding and this added set are connect in series. In order to neutralize the cross magnetizing effect of armature reaction The series connected compensating windings produce a magnetic field, which varies directly with armature current.





TYPES OF REPULSION MOTOR

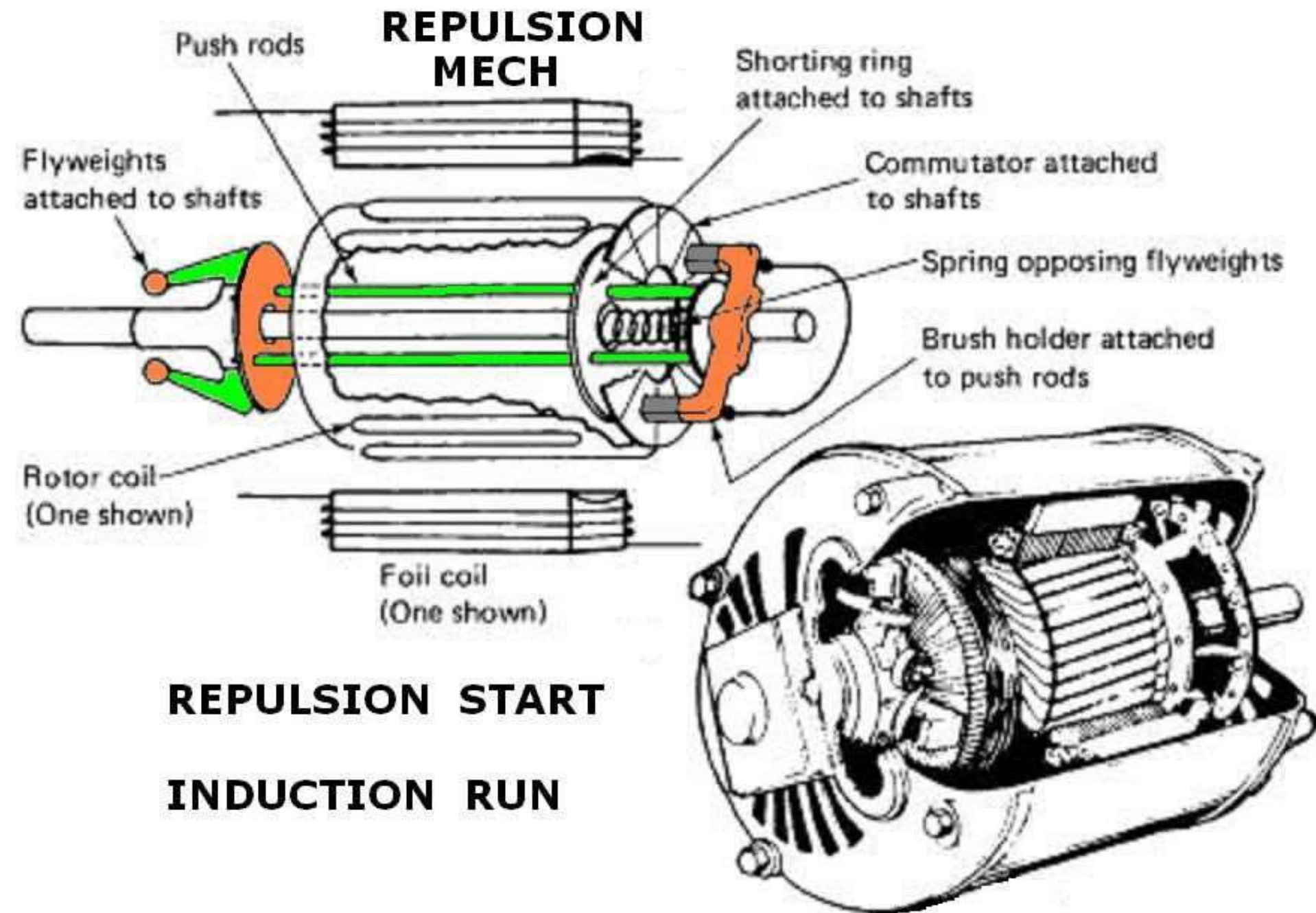


REPULSION-START INDUCTION MOTOR

This motor starts as a repulsion motor, but normally runs as an induction motor, with constant speed characteristics.

It consists,

- One stator
- One rotor which is similar to the wire-wound d.c. armature
- A commutator and a centrifugal mechanism which short-circuits the commutator bars.





SUMMARY

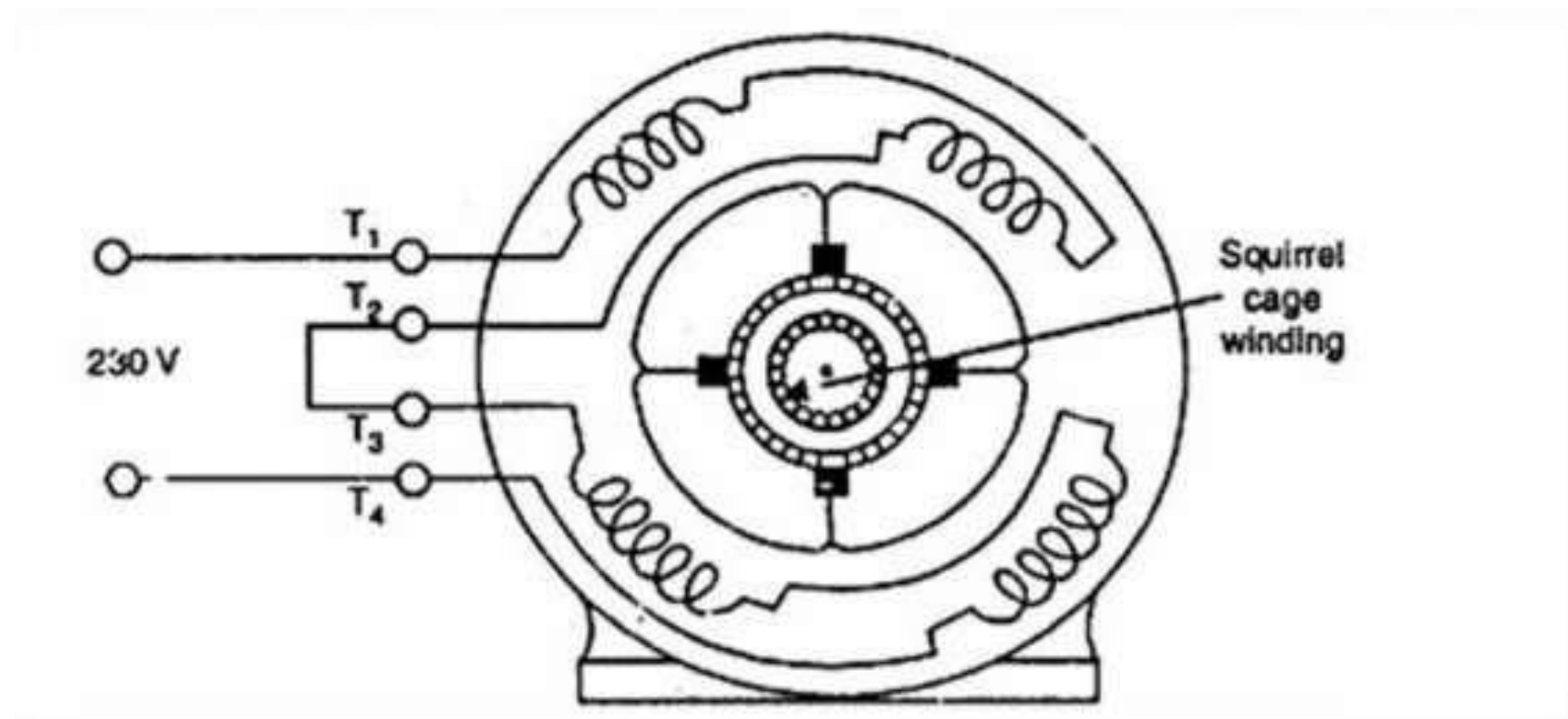


• REPULSION INDUCTION MOTOR

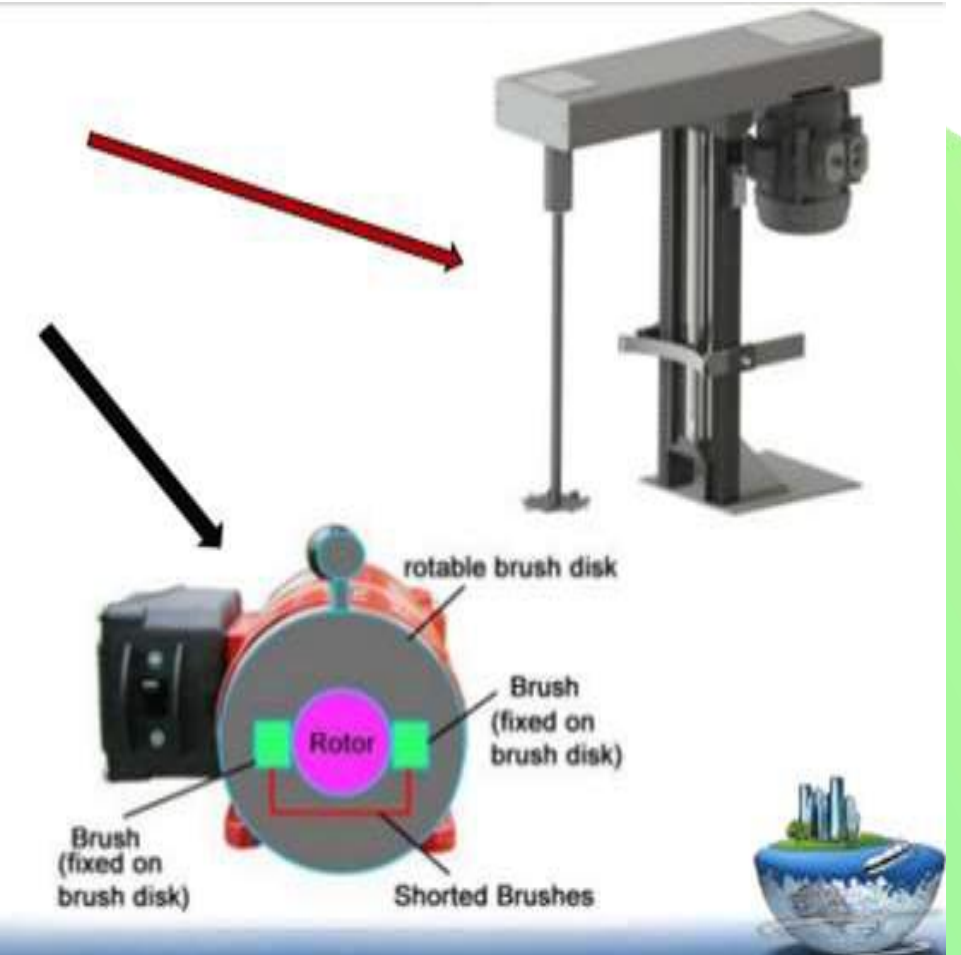
It works on the combined principle of repulsion and induction.

It consist,

- Stator winding
- Two rotor winding : one squirrel cage and other usual d.c winding connected to the commutator and
- A short-circuit set of two brushes



- high speed lift
- fans & pumps





KEEP
LEARNING..
Thank u

SEE YOU IN NEXT CLASS