SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.

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DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB204 – AUTOMOTIVE ELECTRICAL AND ELECTRONICS ENGINEERING

II YEAR / IV SEMESTER

Unit 2 – Starting and Ignition System

Topic : Principle and working of Starter Motor

STARTING SYSTEM

- A starter motor, also known simply as a starter, is a device used in internal combustion engine-powered vehicles to initiate the engine's operation.
- Its primary function is to crank the engine until it starts running under its own power.
- The starter motor is typically located near the transmission bell housing, where it meshes with the engine's flywheel.
- It is usually mounted on the engine block or transmission housing.

COMPONENTS OF STARTING SYSTEM

- **Armature**: The armature is the rotating component of the starter motor. It consists of a shaft with a series of windings (often copper wire) wound around an iron core. When electrical current flows through these windings, it creates a magnetic field that interacts with the magnetic field produced by the stator.
- **Stator**: The stator is the stationary component of the starter motor. It surrounds the armature and consists of a series of electromagnets (field coils) mounted within an iron housing. The magnetic field produced by the stator interacts with the magnetic field produced by the armature to create rotational motion.

COMPONENTS OF STARTING SYSTEM

- **Solenoid**: The solenoid is an electromagnetic switch that controls the flow of electrical current to the starter motor. It is typically mounted on top of the starter motor and consists of a coil of wire (electromagnet) encased in a housing. When energized, the solenoid's plunger is pulled in, engaging the starter motor's pinion gear with the engine's flywheel or flexplate.
- **Pinion Gear**: The pinion gear is a small gear attached to the starter motor's armature shaft. When the solenoid is activated, it pushes the pinion gear forward, causing it to engage with the teeth of the engine's flywheel or flexplate. This allows the starter motor to crank the engine.

COMPONENTS OF STARTING SYSTEM

- **Drive Assembly**: The drive assembly includes the pinion gear, shaft, and related components that transmit rotational motion from the starter motor to the engine's flywheel or flexplate.
- **Brushes and Commutator (in brushed motors)**: In brushed starter motors, brushes and a commutator are used to transfer electrical current to the armature windings as it rotates. The brushes make contact with the commutator, which is a segmented cylindrical conductor attached to the armature shaft.

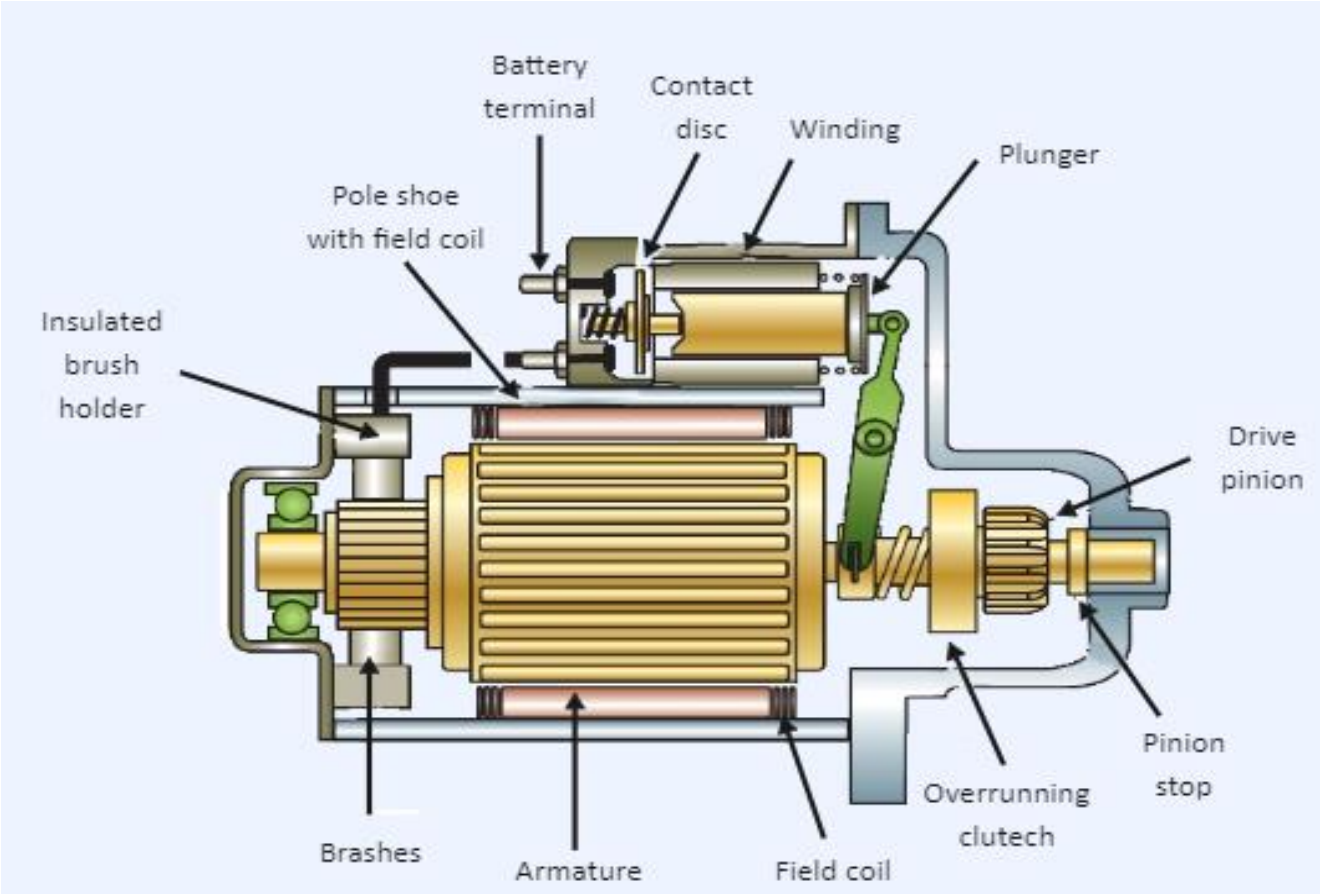
COMPONENTS OF STARTING SYSTEM

- **Mounting Flange**: The mounting flange is the portion of the starter motor housing that attaches to the vehicle's engine block or transmission housing. It provides support and stability for the starter motor assembly.

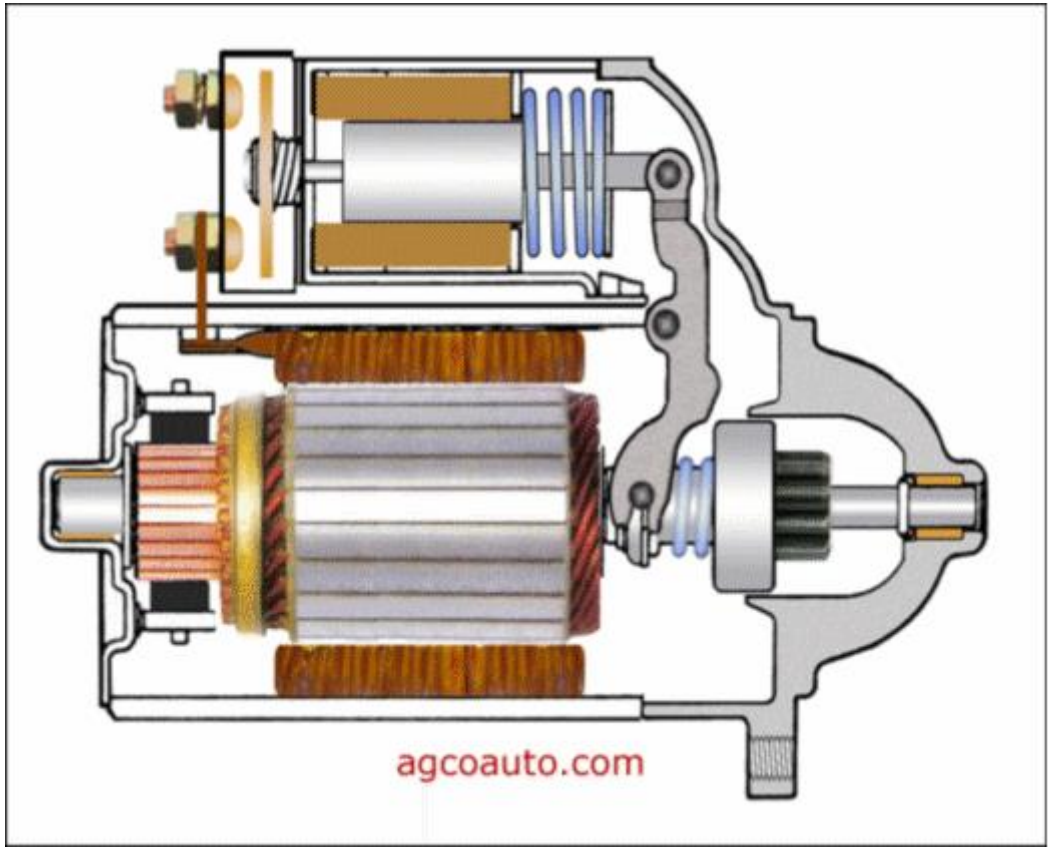
WORKING OF STARTING SYSTEM

- When the electrical current reaches the starter motor, it energizes the motor's windings, creating a magnetic field.
- The starter motor's solenoid engages a small gear (the pinion gear) with the engine's flywheel ring gear.
- As the starter motor rotates, the pinion gear meshes with the teeth of the flywheel, causing the engine's crankshaft to turn.
- This rotational motion of the crankshaft initiates the compression stroke in the engine's cylinders, allowing for the combustion process to start.

STARTING MOTOR



STARTING MOTOR



THANK YOU !!!