



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.



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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUB204 – AUTOMOTIVE ELECTRICAL AND ELECTRONICS ENGINEERING

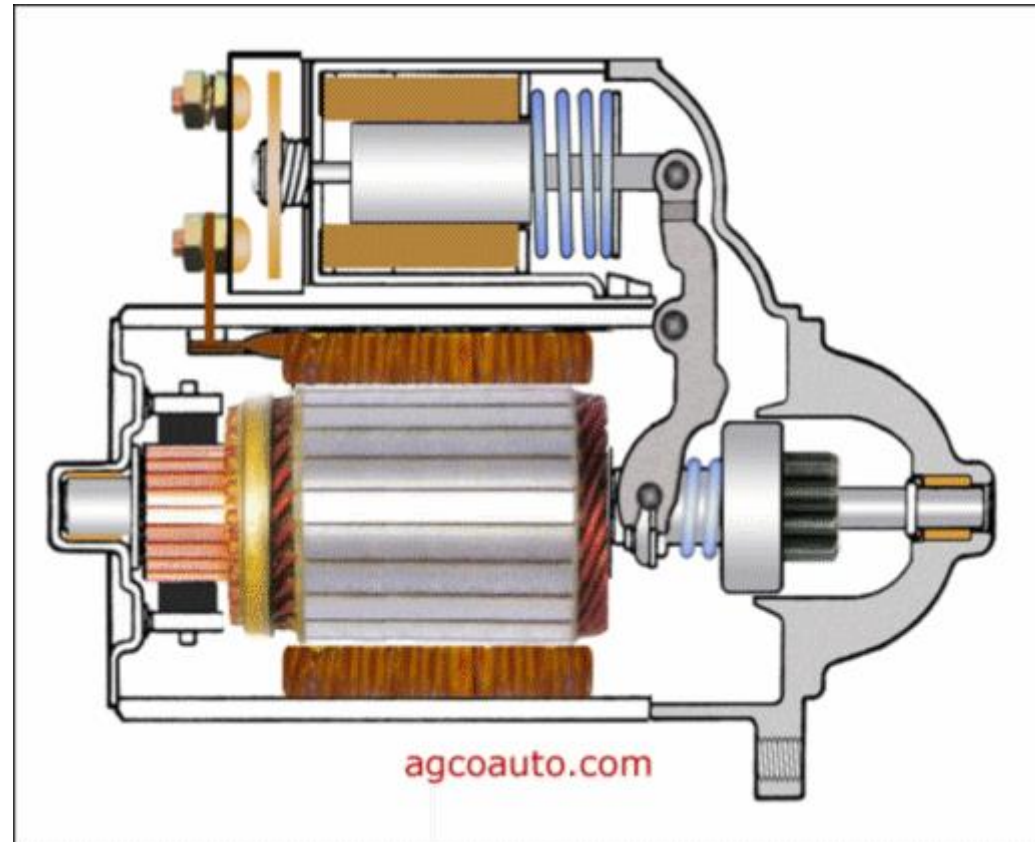
II YEAR / IV SEMESTER

Unit 2 – Starting and Ignition System

Topic : Working of Different Starter Drive Mechanism



STARTER MOTOR





STARTER MOTOR DRIVE MECHANISM



- ❖ The starter drive mechanism, often simply referred to as the "starter drive," is a critical component of the starter motor assembly in automobiles.
- ❖ It is responsible for engaging the starter motor with the engine's flywheel to initiate the engine's operation.
- ❖ The primary function of the starter drive mechanism is to transfer rotational motion from the starter motor to the engine's crankshaft, allowing the engine to start



BENDIX DRIVE MECHANISM



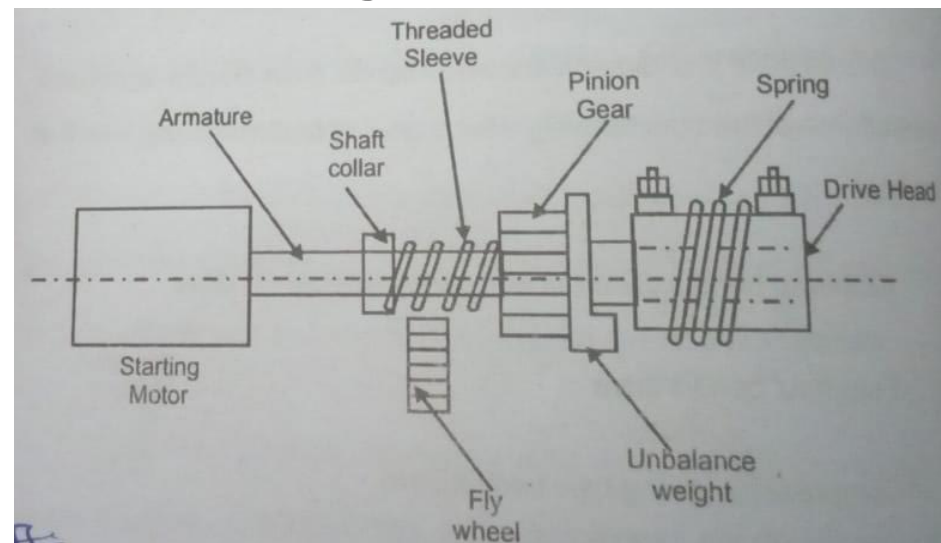
- ❖ The Bendix drive mechanism is one of the earliest and most common types of starter drive mechanisms.
- ❖ It consists of a helical gear, called the Bendix gear, which is mounted on a helical spline and can move axially along the starter shaft.
- ❖ When the starter motor is energized, the solenoid pulls the Bendix gear forward, engaging it with the engine's flywheel.



BENDIX DRIVE MECHANISM



- ❖ As the starter motor turns, the Bendix gear rotates with it, causing the starter drive assembly to extend along the starter shaft and engage with the flywheel teeth.
- ❖ Once the engine starts, the Bendix gear is released, allowing it to disengage from the flywheel and retract back along the starter shaft.





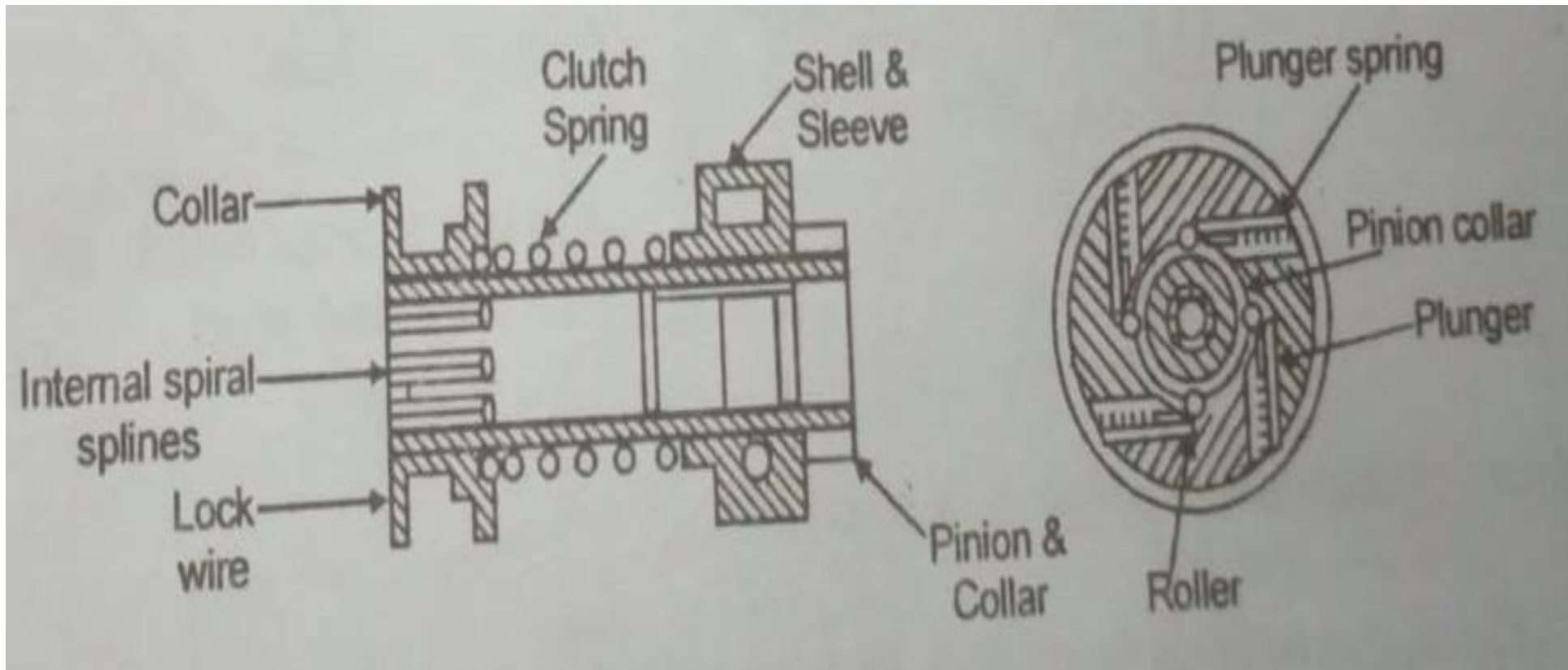
OVERRUNNING CLUTCH DRIVE MECHANISM



- ❖ The overrunning clutch mechanism uses a one-way clutch to allow the starter motor to crank the engine without being driven by the engine once it starts.
- ❖ It typically consists of a sprag or roller-type clutch mounted on the starter shaft.
- ❖ When the starter motor is energized, the clutch engages with the engine's flywheel allowing the starter motor to crank the engine.
- ❖ Once the engine starts and its rotational speed exceeds that of the starter motor, the overrunning clutch disengages, preventing the engine from driving the starter motor.



OVERRUNNING CLUTCH DRIVE MECHANISM





PRE ENGAGED STARTER DRIVE



- ❖ In pre-engaged starter systems, the drive mechanism incorporates both the solenoid and the drive assembly.
- ❖ When the starter motor is energized, the solenoid pushes the drive assembly forward to engage it with the flywheel or flexplate teeth.
- ❖ The drive assembly typically consists of a pinion gear that meshes with the flywheel/flexplate teeth.
- ❖ Once the engine starts, the solenoid releases the drive assembly, allowing it to disengage from the flywheel/flexplate



DIRECT STARTER DRIVE



- ❖ Direct drive starter systems use a starter motor with a fixed drive assembly that engages directly with the flywheel.
- ❖ The drive assembly typically consists of a pinion gear that meshes with the flywheel teeth.
- ❖ When the starter motor is energized, the drive assembly engages with the flywheel, allowing the starter motor to crank the engine.
- ❖ Direct drive systems are less common in modern vehicles due to the complexity of meshing the gear teeth precisely.



THANK YOU !!!