



KNOW HOW

EXPERT EDITION WITH MATT MASTERS



HOW DO ALTERNATORS WORK?

It can be easy to take the parts we work with for granted. We all know alternators are the driving force behind vehicles, supplying the electrical current they need to function. But what drives an alternator? For a better understanding of the components within one of your most important internal components, look no further than NAPA Know How.

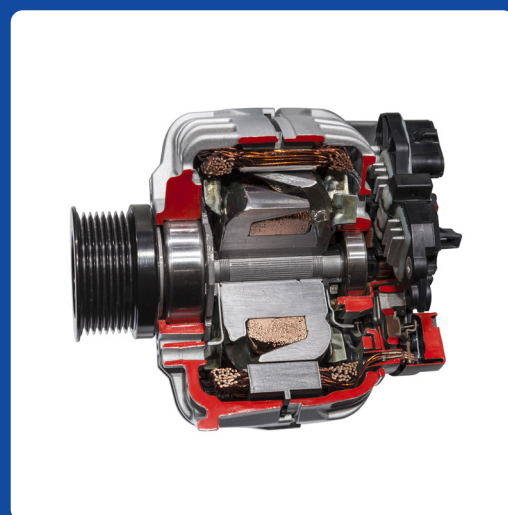


TECHNICAL HELPLINE
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THE COMPONENTS

Alternators are named for their function - they generate alternating electrical current to charge the battery and power the vehicle's electrical devices using the following key components:

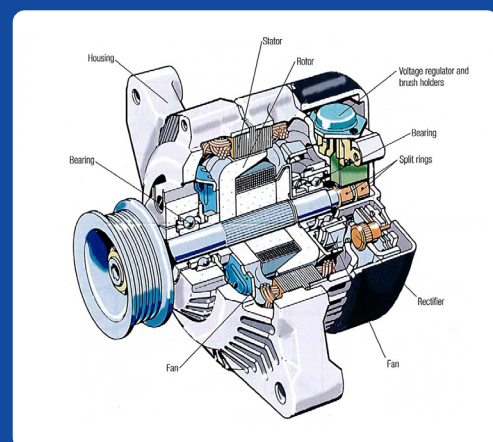
- **The Pulley** - Driven by the engine via a belt to provide rotational force to the rotor shaft.
- **The Rotor** - Contains a coil of wire wrapped around a shaft for generating an electromagnetic field while rotating.
- **The Stator** - A stationary component containing multiple coils wound through a soft iron ring. Generates electrical charge by working in tandem with the rotor.
- **The Rectifier** - Situated at the back of the alternator, responsible for converting Alternating Current (AC) into Direct Current (DC).
- **The Regulator** - An integrated circuit that monitors voltage output and controls the charging process.



THE MECHANICS

The coiled wires in the rotor generate their electromagnetic field when a voltage is applied to both ends. This forces the electric current in the wiring to move in specific directions based on electromagnetic pull. When the charge alternates between positive and negative directional flows, it creates an AC which is then transferred into a DC by the rectifier, as vehicle batteries can only be charged by DC. Rectifiers generally contain diodes which act as 'electrical valves'.

The regulator often uses semiconductors to control the production of electricity based on engine speed, controlling the current to the rotor to vary the output voltage to suit the vehicle's electrical demand.



DID YOU KNOW?

The coils in the stator use copper wires wound between slots in an iron ring to generate three "phases" of AC electricity when the rotor spins. Each phase is typically positioned 120° from the last for a constantly alternating current.



For further information and advice, speak to one of our experts at **03333 136597** or visit www.NAPAautoparts.eu for more braking Know How.