

## Forklift Alternators and Starters

Forklift Starter and Alternator - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid mounted on it. When current from the starting battery is applied to the solenoid, basically through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is situated on the driveshaft and meshes the pinion with the starter ring gear which is found on the flywheel of the engine.

Once the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch which opens the spring assembly so as to pull the pinion gear away from the ring gear. This particular action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by an overrunning clutch. This allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion remains engaged, for instance since the operator fails to release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

This aforesaid action stops the engine from driving the starter. This is an important step as this particular type of back drive will allow the starter to spin very fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was used in the hybrid scheme mentioned prior. Typically a regular starter motor is designed for intermittent utilization which would preclude it being used as a generator.

Thus, the electrical parts are meant to function for around less than thirty seconds so as to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical components are meant to save cost and weight. This is truly the reason the majority of owner's guidebooks meant for automobiles recommend the driver to stop for at least ten seconds right after each and every ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over instantly.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was used. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, made and introduced during the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights in the body of the drive unit. This was better for the reason that the typical Bendix drive used to disengage from the ring as soon as the engine fired, though it did not stay functioning.

Once the starter motor is engaged and begins turning, the drive unit is forced forward on the helical shaft by inertia. It then becomes latched into the engaged position. When the drive unit is spun at a speed higher than what is attained by the starter motor itself, like for example it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented before a successful engine start.