

## Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor nowadays is typically either a series-parallel wound direct current electric motor that includes a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. As soon as current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is positioned on the driveshaft and meshes the pinion using the starter ring gear which is found on the engine flywheel.

Once the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch which opens the spring assembly to be able 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 permits the pinion to transmit drive in just a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion remains engaged, like for example in view of the fact that the operator did not release the key once the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above will stop the engine from driving the starter. This vital step stops the starter from spinning very fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement would prevent using the starter as a generator if it was employed in the hybrid scheme discussed prior. Typically a regular starter motor is intended for intermittent use that will preclude it being utilized as a generator.

Thus, the electrical parts are designed to work for more or less under thirty seconds in order to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are meant to save weight and cost. This is the reason most owner's instruction manuals used for vehicles recommend the operator to pause for a minimum of 10 seconds right after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over right away.

The overrunning-clutch pinion was launched onto the market in the early part of the 1960's. Previous to the 1960's, a Bendix drive was utilized. This particular drive system works on a helically cut driveshaft which has a starter drive pinion placed on it. Once the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was better because the typical Bendix drive used so as to disengage from the ring when the engine fired, even though it did not stay running.

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 instance it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented previous to a successful engine start.