

## Forklift Starter and Alternator

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

The solenoid closes the high-current contacts for the starter motor, that starts to turn. When the engine starts, the key operated switch is opened and a spring inside the solenoid assembly pulls 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 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 because the driver did not release the key as soon as 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.

This aforementioned action prevents the engine from driving the starter. This is actually an important step because this particular type of back drive will enable the starter to spin very fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will stop utilizing the starter as a generator if it was used in the hybrid scheme mentioned earlier. Usually a standard starter motor is meant for intermittent use that will preclude it being utilized as a generator.

Thus, the electrical components are intended to be able to operate for about less than thirty seconds so as to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are intended to save weight and cost. This is really the reason the majority of owner's manuals used for automobiles suggest the driver to stop for a minimum of 10 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 immediately.

The overrunning-clutch pinion was launched onto the market in the early 1960's. Prior to the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. Once the starter motor begins turning, the inertia of the drive pinion assembly allows 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 allows the pinion to surpass the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that was made and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights in the body of the drive unit. This was better in view of the fact that the average Bendix drive used so as to disengage from the ring when the engine fired, though it did not stay running.

The drive unit is forced forward by inertia on the helical shaft when the starter motor is engaged and starts turning. Then the starter motor 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, for instance 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, thus unwanted starter disengagement could be avoided previous to a successful engine start.