

## Forklift Starter and Alternator

Forklift Starters and Alternators - A starter motor today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid mounted on it. As soon as current from the starting battery is applied to the solenoid, basically through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is situated on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the flywheel of the engine.

When the starter motor starts to turn, the solenoid closes the high-current contacts. When 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 allows the pinion to transmit drive in only one direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion continues to be engaged, for example because the driver did not release the key when the engine starts or if the solenoid remains engaged as there is a short. This causes the pinion to spin separately of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is an important step for the reason that this type of back drive would allow the starter to spin very fast that it could fly apart. Unless modifications were done, the sprag clutch arrangement will preclude using the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Usually a standard starter motor is meant for intermittent utilization that would stop it being utilized as a generator.

Thus, the electrical parts are meant to work for just about under 30 seconds to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are intended to save cost and weight. This is truly the reason nearly all owner's handbooks meant for vehicles recommend the operator to stop for at least 10 seconds right after every ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over instantly.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins 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 allows the pinion to go beyond 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.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was much better as the typical Bendix drive used so as to disengage from the ring when the engine fired, even though it did not stay functioning.

When the starter motor is engaged and starts turning, the drive unit is forced forward on the helical shaft by inertia. It then becomes latched into the engaged position. Once the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for example 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, thus unwanted starter disengagement could be avoided before a successful engine start.