

## Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor of today is normally either a series-parallel wound direct current electric motor that includes a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is situated on the driveshaft and meshes the pinion utilizing the starter ring gear which is found on the flywheel of the engine.

As soon as the starter motor begins to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid consists of 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 means of an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance in view of the fact that the driver did not release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is actually an important step in view of the fact that this kind of back drive would enable the starter to spin so fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was used in the hybrid scheme mentioned earlier. Usually an average starter motor is meant for intermittent utilization which would prevent it being used as a generator.

The electrical components are made to work for around 30 seconds so as to prevent overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are intended to save cost and weight. This is really the reason nearly all owner's manuals utilized for vehicles recommend the operator to stop for a minimum of ten seconds after each 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was used. 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 allows it to ride forward on the helix, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables 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 called the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights inside the body of the drive unit. This was much better in view of the fact that the average Bendix drive used so as to disengage from the ring when the engine fired, even though it did not stay running.

The drive unit is force forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. Next the starter motor becomes latched into the engaged position. As soon as 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 after that 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 avoided before a successful engine start.