Forklift Starters and Alternators

Forklift Starters and Alternators - A starter motors today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid mounted on it. When current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is located on the driveshaft and meshes the pinion with the starter ring gear which is seen on the engine flywheel.

As soon as the starter motor begins to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid has a key operated switch that opens the spring assembly to be able to pull the pinion gear away from the ring gear. This 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 just a single direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, like for instance since the operator 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 independently of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is an important step in view of the fact that this particular kind of back drive will allow the starter to spin so fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent using the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually a standard starter motor is meant for intermittent use which will preclude it being used as a generator.

Thus, the electrical components are meant to operate for just about under thirty seconds so as to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are meant to save cost and weight. This is truly the reason the majority of owner's guidebooks meant for automobiles suggest the driver to pause for a minimum of ten seconds after each ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over instantly.

During the early 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. Once the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this point, 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 introduced during 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 better as the typical Bendix drive used to disengage from the ring once the engine fired, though it did not stay running.

The drive unit if force forward by inertia on the helical shaft as soon as the starter motor is engaged and begins 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, for example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented prior to a successful engine start.