Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor of today is typically either a series-parallel wound direct current electric motor that consists of a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. Once 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 which is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the flywheel of the engine.

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 in order 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 an overrunning clutch. This permits the pinion to transmit drive in just one direction. Drive is transmitted in this method 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 as soon as the engine starts or if the solenoid remains engaged since there is a short. This causes the pinion to spin independently of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is actually an essential step in view of the fact that this kind of back drive would enable the starter to spin very fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement will stop utilizing the starter as a generator if it was employed in the hybrid scheme mentioned prior. Usually an average starter motor is designed for intermittent use that will preclude it being utilized as a generator.

The electrical components are made to function for roughly 30 seconds so as to avoid overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are intended to save weight and cost. This is the reason nearly all owner's manuals intended for vehicles suggest the driver to pause for a minimum of 10 seconds after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

The overrunning-clutch pinion was introduced onto the marked in the early 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore 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 hence out of mesh with the ring gear.

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed 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 an enhancement because the standard Bendix drive used in order to disengage from the ring as soon as the engine fired, though it did not stay running.

The drive unit if force forward by inertia on the helical shaft when the starter motor is engaged and begins turning. Next the starter motor becomes latched into the engaged position. When 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 prevented before a successful engine start.