Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor nowadays is typically either a series-parallel wound direct current electric motor which includes a starter solenoid, that is similar to a relay mounted on it, or it can 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 that pushes out the drive pinion which is positioned on the driveshaft and meshes the pinion using the starter ring gear that is seen on the flywheel of the engine.

As soon as the starter motor starts to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has a key operated switch that opens the spring assembly 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 just one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance in view of the fact that the operator fails to release the key when the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin independently of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is actually an important step since this type of back drive will allow the starter to spin really fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent the use of the starter as a generator if it was used in the hybrid scheme mentioned earlier. Usually a standard starter motor is intended for intermittent use which would stop it being used as a generator.

Thus, the electrical components are meant to function for just about less than thirty seconds in order to avoid overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are intended to save weight and cost. This is actually the reason nearly all owner's guidebooks intended for vehicles suggest the driver to pause for at least ten seconds right after each ten or fifteen seconds of cranking the engine, if trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was launched onto the marked during the early 1960's. Previous to the 1960's, a Bendix drive was utilized. This particular drive system works on a helically cut driveshaft which consists of a starter drive pinion placed on it. Once the starter motor starts turning, 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 go beyond the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and thus 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 developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was an improvement in view of the fact that the typical Bendix drive used to disengage from the ring as soon as the engine fired, even though it did not stay functioning.

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. 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 then 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 prior to a successful engine start.