Forklift Starters and Alternators

Forklift Starters and Alternators - A starter motors today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid installed on it. When current from the starting battery is applied to the solenoid, mainly through 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 utilizing the starter ring gear that is found 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 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 an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, for example because the operator fails to release the key once the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

The actions discussed above would prevent the engine from driving the starter. This vital step stops the starter from spinning so fast that it will fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude utilizing the starter as a generator if it was used in the hybrid scheme mentioned prior. Normally a regular starter motor is intended for intermittent use that will preclude it being utilized as a generator.

Therefore, the electrical parts are intended to be able to work for just about under 30 seconds in order to avoid 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 most owner's guidebooks for vehicles recommend the driver to pause for a minimum of ten seconds right after every 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was launched onto the marked in the early part of the 1960's. Prior to the 1960's, a Bendix drive was utilized. This drive system works on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as the starter motor starts 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 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 developed in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, developed and introduced during the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was a lot better since the typical Bendix drive used to disengage from the ring when the engine fired, even if it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Next the starter motor becomes latched into the engaged position. Once the drive unit is spun at a speed higher than what is attained by the starter motor itself, for example 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 before a successful engine start.