Forklift Alternators and Starters

Forklift Starter and Alternator - A starter motors today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. 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 that is positioned on the driveshaft and meshes the pinion using the starter ring gear which is found on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. When the engine starts, the key operated switch is opened and a spring in the solenoid assembly pulls 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 allows the pinion to transmit drive in just a single direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, for example because the operator fails to release the key when the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This causes the pinion to spin independently of its driveshaft.

The actions discussed above will stop the engine from driving the starter. This important step prevents the starter from spinning really fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement would prevent utilizing the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Usually an average starter motor is intended for intermittent use that will stop it being used as a generator.

Hence, the electrical components are meant to work for about less than 30 seconds to be able to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical parts are intended to save cost and weight. This is truly the reason most owner's instruction manuals utilized for automobiles suggest the operator to stop for a minimum of ten seconds after each ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was launched onto the marked in the early 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system works on a helically cut driveshaft that 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. 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 point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was made and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was a lot better because the typical Bendix drive used in order to disengage from the ring once the engine fired, though it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and starts turning. Then 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 instance it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided before a successful engine start.