Forklift Alternators and Starters

Forklift Starter and Alternator - The starter motor nowadays is typically either a series-parallel wound direct current electric motor which consists of a starter solenoid, which is similar to a relay mounted on it, or it can be a permanent-magnet composition. As soon as 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 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. As soon as the engine has started, the solenoid consists of a key operated switch that opens the spring assembly so as 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 allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion remains engaged, like for example as the driver did not release the key as soon as the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This actually causes the pinion to spin separately of its driveshaft.

This aforesaid action stops the engine from driving the starter. This is an essential step in view of the fact that this kind of back drive will enable the starter to spin very fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was used in the hybrid scheme mentioned earlier. Normally an average starter motor is meant for intermittent use which would prevent it being used as a generator.

The electrical components are made to be able to work for roughly 30 seconds to be able to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save cost and weight. This is the reason nearly all owner's guidebooks intended for vehicles recommend the driver to stop for at least ten seconds after each 10 or 15 seconds of cranking the engine, whenever trying to start an engine which does not turn over at once.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. When 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. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was developed and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was an improvement because the standard Bendix drive used to disengage from the ring once the engine fired, although it did not stay functioning.

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 attained 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, hence unwanted starter disengagement could be prevented before a successful engine start.