Forklift Starters and Alternators

Forklift Starters and Alternators - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. Once 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 located on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the flywheel of the engine.

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 permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion remains engaged, for example in view of the fact that the driver fails to release the key once the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an important step as this kind of back drive would enable the starter to spin very fast that it would fly apart. Unless modifications were made, the sprag clutch arrangement will preclude using the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Usually an average starter motor is intended for intermittent utilization that will preclude it being used as a generator.

Therefore, the electrical parts are meant to be able to operate for more or less less than 30 seconds so as to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are intended to save weight and cost. This is really the reason nearly all owner's instruction manuals for automobiles suggest the operator to stop for at least 10 seconds right after each ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was launched onto the marked during the early part of the 1960's. Before the 1960's, a Bendix drive was utilized. This particular drive system operates on a helically cut driveshaft that consists of a starter drive pinion placed on it. Once the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this moment, 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 made during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights within the body of the drive unit. This was much better because the average Bendix drive utilized 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 once the starter motor is engaged and starts turning. Afterward 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 example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented before a successful engine start.