Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor nowadays is normally 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. 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 that is positioned on the driveshaft and meshes the pinion using the starter ring gear that is seen on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. After the engine starts, the key operated switch is opened and a spring inside the solenoid assembly pulls 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 an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance for the reason that the operator fails to release the key once the engine starts or if the solenoid remains engaged as there is a short. This actually causes the pinion to spin separately of its driveshaft.

The actions mentioned above would prevent the engine from driving the starter. This vital step prevents the starter from spinning very fast that it could fly apart. Unless modifications were done, the sprag clutch arrangement would prevent the use of the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Typically a regular starter motor is meant for intermittent use which would stop it being used as a generator.

The electrical components are made to operate for approximately 30 seconds in order to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are meant to save cost and weight. This is the reason most owner's guidebooks used for automobiles recommend the operator to stop for a minimum of 10 seconds right after each 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over instantly.

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 functions on a helically cut driveshaft which has 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, thus engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear allows the pinion to surpass the rotating speed of the starter. At this instant, 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 made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights inside the body of the drive unit. This was an enhancement in view of the fact that the average Bendix drive used so as to disengage from the ring when the engine fired, even though 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. Once 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 next 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 avoided previous to a successful engine start.