Forklift Starters and Alternators

Forklift Alternators and Starters - 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 via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is situated on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. When the engine starts, the key operated switch is opened and a spring within 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 means of an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example for the reason that the driver did not release the key once the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

The actions mentioned above would stop the engine from driving the starter. This important step prevents the starter from spinning very fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement would stop using the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Typically a regular starter motor is intended for intermittent use which would preclude it being used as a generator.

Thus, the electrical components are designed to function for around less than 30 seconds to be able to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are designed to save cost and weight. This is the reason nearly all owner's handbooks for vehicles suggest the driver to stop for a minimum of ten seconds right after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was launched onto the marked during the early 1960's. Prior to the 1960's, a Bendix drive was utilized. This drive system operates on a helically cut driveshaft which has 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, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

During 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 together with a set of flyweights in the body of the drive unit. This was an improvement since the standard Bendix drive utilized so as to disengage from the ring as soon as the engine fired, even though it did not stay functioning.

When the starter motor is engaged and starts turning, the drive unit is forced forward on the helical shaft by inertia. It then 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 example it is backdriven by the running engine, and then 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 previous to a successful engine start.