Forklift Starter and Alternator

Forklift Starters and Alternators - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid mounted on it. When current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is located on the driveshaft and meshes the pinion with the starter ring gear that is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. Once 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 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 method via the pinion to the flywheel ring gear. The pinion remains engaged, like for example in view of the fact that the operator fails to release the key when the engine starts or if the solenoid remains engaged for the reason that there is a short. This actually causes the pinion to spin separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is actually an important step because this type of back drive would allow the starter to spin so fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude using the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Typically a standard starter motor is meant for intermittent use which will prevent it being used as a generator.

Therefore, the electrical components are intended to work for about under 30 seconds to be able to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are intended to save cost and weight. This is the reason the majority of owner's manuals for automobiles suggest the operator to pause for at least ten seconds right after each and every ten or fifteen seconds of cranking the engine, if trying to start an engine which does not turn over right away.

During the early 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. As soon as the starter motor begins turning, the inertia of the drive pinion assembly allows 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 enables 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.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that was developed and launched during 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 better for the reason that the typical Bendix drive utilized so as to disengage from the ring once the engine fired, even if 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. Then the starter motor becomes latched into the engaged position. When the drive unit is spun at a speed higher than what is achieved by the starter motor itself, for example 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, thus unwanted starter disengagement can be prevented prior to a successful engine start.