Forklift Alternators and Starters

Forklift Alternators and Starters - The starter motor nowadays is usually 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 could be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is situated on the driveshaft and meshes the pinion utilizing the starter ring gear which is found on the engine flywheel.

Once the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch that opens the spring assembly to pull 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 an overrunning clutch. This permits the pinion to transmit drive in just one direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion remains engaged, like for instance because the operator did not release the key when the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This causes the pinion to spin separately of its driveshaft.

This aforesaid action stops the engine from driving the starter. This is an essential step as this type of back drive would allow the starter to spin so fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement would preclude using the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Usually an average starter motor is designed for intermittent utilization that will prevent it being utilized as a generator.

The electrical components are made to operate for approximately 30 seconds so as to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are designed to save weight and cost. This is truly the reason nearly all owner's instruction manuals used for automobiles recommend the driver to pause for a minimum of 10 seconds after each and every ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over at once.

The overrunning-clutch pinion was introduced onto the marked in the early part of the 1960's. Prior to the 1960's, a Bendix drive was utilized. This particular drive system works on a helically cut driveshaft that has a starter drive pinion placed on it. As soon as the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and thus 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 together with a set of flyweights inside the body of the drive unit. This was an improvement because the average Bendix drive used to be able 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 as soon as 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 example it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented previous to a successful engine start.