Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor nowadays is normally either a series-parallel wound direct current electric motor that consists of a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. As soon as current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is located on the driveshaft and meshes the pinion with the starter ring gear which is found on the engine flywheel.

When the starter motor begins to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid consists of a key operated switch that opens the spring assembly to be able 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 an overrunning clutch. This allows the pinion to transmit drive in just one direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for example in view of the fact that the driver 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 significant step prevents the starter from spinning really fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would prevent making use of the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually a regular starter motor is meant for intermittent use that will preclude it being used as a generator.

The electrical components are made in order to operate for about thirty 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 weight and cost. This is the reason nearly all owner's manuals meant for vehicles recommend the operator to stop for at least ten seconds right after each ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over right away.

The overrunning-clutch pinion was launched 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 operates on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as 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. Once the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and therefore 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 developed 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 improvement since the average Bendix drive used so as to disengage from the ring once the engine fired, even though it did not stay running.

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. 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 allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided prior to a successful engine start.