Forklift Alternators and Starters

Forklift Alternators and Starters - The starter motor nowadays is typically either a series-parallel wound direct current electric motor which consists of a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. Once 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 which is situated on the driveshaft and meshes the pinion using the starter ring gear which is seen on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. After 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 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 way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example because the operator did not release the key as soon as the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This actually causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is actually an essential step in view of the fact that this particular kind of back drive would allow the starter to spin very fast that it will fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude making use of the starter as a generator if it was made use of in the hybrid scheme discussed prior. Normally an average starter motor is intended for intermittent use which will preclude it being used as a generator.

Hence, the electrical components are intended to work for about under thirty seconds to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are intended to save cost and weight. This is the reason nearly all owner's manuals used for automobiles suggest the operator to stop for at least 10 seconds after each and every 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over right away.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this moment, 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 developed. The overrunning-clutch design that was developed and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights in the body of the drive unit. This was a lot better for the reason that the average Bendix drive utilized to be able to disengage from the ring once the engine fired, though it did not stay functioning.

As soon as the starter motor is engaged and begins 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, for example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided previous to a successful engine start.