Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor these days is usually either a series-parallel wound direct current electric motor that has a starter solenoid, which is similar to a relay mounted on it, or it can be a permanent-magnet composition. As soon as 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 using the starter ring gear which is seen on the flywheel of the engine.

When 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 be able 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 allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance in view of the fact that the operator fails to release the key once the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin separately of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is an important step since this particular kind of back drive will enable the starter to spin very fast that it can fly apart. Unless adjustments were done, the sprag clutch arrangement would prevent using the starter as a generator if it was employed in the hybrid scheme discussed earlier. Usually an average starter motor is designed for intermittent use which would prevent it being utilized as a generator.

The electrical components are made in order to operate for about thirty seconds to be able to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical parts are designed to save cost and weight. This is the reason the majority of owner's handbooks utilized for automobiles recommend the driver to stop for at least ten seconds right after every ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over at once.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was used. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. As soon as 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. When the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and hence 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 developed and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was an improvement since the standard Bendix drive utilized in order to disengage from the ring once the engine fired, though it did not stay running.

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