Forklift Alternators and Starters

Forklift Alternators and Starters - A starter motors today is typically 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 via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is located on the driveshaft and meshes the pinion with the starter ring gear that is found on the engine flywheel.

When the starter motor starts to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid has a key operated switch which opens the spring assembly so as 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 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 driver fails to release the key when 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 separately of its driveshaft.

The actions discussed above will prevent the engine from driving the starter. This vital step prevents the starter from spinning so fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement will stop using the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually an average starter motor is intended for intermittent use that would stop it being utilized as a generator.

Hence, the electrical components are meant to work for more or less under thirty seconds so as to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical components are meant to save weight and cost. This is really the reason most owner's manuals used for automobiles suggest the driver to pause for a minimum of 10 seconds after every ten or fifteen seconds of cranking the engine, when 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 utilized. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. When the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. As soon as 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 hence out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was an enhancement as the standard Bendix drive used so as to disengage from the ring once the engine fired, though it did not stay running.

Once 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. Once 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 could be avoided before a successful engine start.