Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor these days is typically 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, mainly via 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 with the starter ring gear that is found on the flywheel of the engine.

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 which 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 permits the pinion to transmit drive in only a single direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance since the driver fails to release the key as soon as the engine starts or if the solenoid remains engaged since there is a short. This actually causes the pinion to spin separately of its driveshaft.

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

The electrical components are made to work for roughly thirty seconds to be able to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are meant to save weight and cost. This is the reason nearly all owner's guidebooks used for automobiles suggest the operator to stop for at least ten seconds right after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over immediately.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was used. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows 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.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that was made and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was better in view of the fact that the typical Bendix drive used so as to disengage from the ring when the engine fired, even if it did not stay running.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and starts turning. Next the starter motor becomes latched into the engaged position. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for instance it is backdriven by the running engine, and then 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 before a successful engine start.