Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor nowadays is usually either a series-parallel wound direct current electric motor which has a starter solenoid, that 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, basically through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the flywheel of the engine.

Once 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 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 method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example in view of the fact that the operator did not release the key once the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This causes the pinion to spin independently of its driveshaft.

The actions mentioned above will prevent the engine from driving the starter. This important step stops the starter from spinning really fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement would preclude the use of the starter as a generator if it was used in the hybrid scheme discussed prior. Normally an average starter motor is designed for intermittent use that will prevent it being used as a generator.

Hence, the electrical components are meant to be able to function for about less than 30 seconds to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are meant to save cost and weight. This is really the reason most owner's guidebooks meant for vehicles suggest the driver to pause for at least 10 seconds right after each 10 or 15 seconds of cranking the engine, whenever trying to start an engine which does not turn over instantly.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior 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 begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus 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 point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

The development of Bendix drive was developed in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights within the body of the drive unit. This was an improvement for the reason that the standard Bendix drive used so as to disengage from the ring when the engine fired, even if 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 instance it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided before a successful engine start.