Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor these days is usually 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 can be a permanent-magnet composition. Once 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 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 inside 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 means of an overrunning clutch. This permits the pinion to transmit drive in just one direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example because the operator fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

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

Thus, the electrical components are intended to be able to function for just about under thirty seconds to be able to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are meant to save weight and cost. This is actually the reason the majority of owner's handbooks for automobiles recommend the operator to pause for a minimum of ten seconds after each 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was introduced onto the marked in the early 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system works on a helically cut driveshaft which consists of a starter drive pinion placed on it. As soon as the starter motor starts turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond the rotating speed of the starter. At this instant, 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 made in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was better as the standard Bendix drive utilized in order to disengage from the ring as soon as the engine fired, even though it did not stay running.

As soon as 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. As soon as the drive unit is spun at a speed higher than what is attained by the starter motor itself, for instance it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented prior to a successful engine start.