Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor these days is normally either a series-parallel wound direct current electric motor that includes a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. Once current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is situated on the driveshaft and meshes the pinion with the starter ring gear which is seen on the engine flywheel.

Once the starter motor starts to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has a key operated switch that opens the spring assembly 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 just a single direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance as the driver fails to release the key as soon as 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.

This aforementioned action prevents the engine from driving the starter. This is actually an important step since this particular type of back drive would allow the starter to spin very fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent making use of the starter as a generator if it was made use of in the hybrid scheme discussed prior. Normally an average starter motor is designed for intermittent use which would prevent it being utilized as a generator.

Thus, the electrical parts are meant to operate for approximately less than 30 seconds so as to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are intended to save weight and cost. This is actually the reason most owner's manuals used for vehicles recommend the operator to pause for a minimum of 10 seconds after each and every 10 or 15 seconds of cranking the engine, whenever 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. Prior 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. When the starter motor begins spinning, the inertia of the drive pinion assembly allows 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 allows the pinion to exceed 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 during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was an enhancement because the average Bendix drive used in order to disengage from the ring as soon as the engine fired, even though it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. Next the starter motor 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 instance it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be prevented prior to a successful engine start.