Forklift Alternators and Starters

Forklift Starter and Alternator - The starter motor these days is normally either a series-parallel wound direct current electric motor which has 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 through 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 using the starter ring gear which is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. Once the engine starts, the key operated switch is opened and a spring within the solenoid assembly pulls 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 permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance as the driver fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an important step because this particular type of back drive will allow the starter to spin so fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement will preclude using the starter as a generator if it was employed in the hybrid scheme mentioned prior. Normally a standard starter motor is designed for intermittent use which would prevent it being utilized as a generator.

The electrical components are made so as to work for approximately 30 seconds to avoid overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save cost and weight. This is actually the reason the majority of owner's manuals meant for automobiles recommend the driver to pause for at least 10 seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was introduced onto the marked during the early part of the 1960's. Before the 1960's, a Bendix drive was used. This drive system functions on a helically cut driveshaft which consists of a starter drive pinion placed on it. As soon as the starter motor starts spinning, 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 allows the pinion to go beyond the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was a lot better for the reason that the typical Bendix drive utilized to disengage from the ring once the engine fired, even if it did not stay running.

The drive unit if force forward by inertia on the helical shaft when the starter motor is engaged and starts turning. Afterward 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 example 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 could be avoided prior to a successful engine start.