Forklift Starters and Alternators

Forklift Alternators and Starters - The starter motor these days is normally either a series-parallel wound direct current electric motor which includes a starter solenoid, that 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 located on the driveshaft and meshes the pinion utilizing 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. When the engine starts, the key operated switch is opened and a spring in 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 one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example because 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 above mentioned action stops the engine from driving the starter. This is actually an important step since this particular kind of back drive will allow the starter to spin very fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will preclude the use of the starter as a generator if it was made use of in the hybrid scheme discussed prior. Usually a standard starter motor is intended for intermittent use that would stop it being utilized as a generator.

Thus, the electrical parts are meant to be able to operate for more or less under 30 seconds so as to prevent 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 the reason nearly all owner's instruction manuals intended for automobiles recommend the operator to stop for a minimum of ten seconds after every 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over right away.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was used. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor starts spinning, 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 surpass the rotating speed of the starter. At this instant, 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 developed. 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 along with a set of flyweights in the body of the drive unit. This was better for the reason that the average Bendix drive used in order to disengage from the ring once the engine fired, even if it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft when the starter motor is engaged and begins turning. Then the starter motor 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 example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented before a successful engine start.