Forklift Alternators and Starters

Forklift Starter and Alternator - 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. When 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 that is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that 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 means of an overrunning clutch. This allows the pinion to transmit drive in just one direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance since the operator did not release the key once the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an important step because this kind of back drive will enable the starter to spin really fast that it can 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. Typically a regular starter motor is intended for intermittent use that will preclude it being utilized as a generator.

The electrical parts are made to function for approximately 30 seconds to be able to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are designed to save cost and weight. This is truly the reason nearly all owner's manuals used for automobiles suggest the operator to pause for at least ten seconds after every ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over right away.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. When 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. Once the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this moment, 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 along with a set of flyweights in the body of the drive unit. This was better in view of the fact that the standard Bendix drive used to disengage from the ring when the engine fired, though it did not stay running.

As soon as the starter motor is engaged and begins 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, like for instance it is backdriven by the running engine, and afterward 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 prevented before a successful engine start.