Forklift Alternators and Starters

Forklift Starters and Alternators - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. When current from the starting battery is applied to the solenoid, mainly 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 with the starter ring gear which is seen on the flywheel of the engine.

As soon as the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch that opens the spring assembly in order to pull 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 just one direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion remains engaged, for instance since the operator 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 separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is actually an essential step in view of the fact that this particular kind of back drive would enable the starter to spin really fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude using the starter as a generator if it was employed in the hybrid scheme mentioned prior. Usually a standard starter motor is meant for intermittent use that would prevent it being used as a generator.

The electrical components are made in order to work for approximately thirty seconds to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are meant to save weight and cost. This is the reason most owner's guidebooks meant for automobiles recommend the driver to stop for at least ten seconds right after each 10 or 15 seconds of cranking the engine, if 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. Prior to that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence 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 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 developed in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and introduced in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was better in view of the fact that the average Bendix drive used so as to disengage from the ring when the engine fired, even if it did not stay running.

When 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, like for instance it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement could be avoided previous to a successful engine start.