Forklift Starter and Alternator

Forklift Alternators and Starters - 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 could be a permanent-magnet composition. Once current from the starting battery is applied to the solenoid, basically through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is situated on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the flywheel of the engine.

Once the starter motor begins 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 action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by means of an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, for instance as the operator fails to release the key as soon as the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin independently of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is actually an essential step because this kind of back drive would enable the starter to spin really fast that it can fly apart. Unless adjustments were done, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Typically an average starter motor is designed for intermittent use that will prevent it being used as a generator.

The electrical components are made so as to function for around thirty seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are meant to save weight and cost. This is the reason nearly all owner's guidebooks intended for automobiles recommend the operator to stop for at least 10 seconds right after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

During the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was used. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor begins turning, 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 surpass 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 developed during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was much better in view of the fact that the typical Bendix drive used so as to disengage from the ring as soon as the engine fired, though it did not stay running.

As soon as 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. When the drive unit is spun at a speed higher than what is achieved 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 permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be prevented previous to a successful engine start.