Forklift Starters and Alternators

Forklift Alternators and Starters - The starter motor of today 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. As soon as 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 which is located on the driveshaft and meshes the pinion using the starter ring gear which is seen on the flywheel of the engine.

When the starter motor begins to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has a key operated switch that opens the spring assembly so as 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 only one direction. Drive is transmitted in this particular method through the pinion to the flywheel ring gear. The pinion remains engaged, for instance since the driver did not release the key once the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

The actions discussed above will prevent the engine from driving the starter. This significant step stops the starter from spinning so fast that it will fly apart. Unless modifications were made, the sprag clutch arrangement will stop the use of the starter as a generator if it was employed in the hybrid scheme discussed earlier. Usually a standard starter motor is designed for intermittent utilization that would prevent it being utilized as a generator.

The electrical parts are made so as to function for around 30 seconds in order 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 actually the reason nearly all owner's guidebooks intended for vehicles recommend the operator to pause for at least ten seconds after each 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was introduced onto the marked in the early 1960's. Prior to the 1960's, a Bendix drive was utilized. This particular drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. When the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to exceed 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.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights inside the body of the drive unit. This was an improvement as the typical Bendix drive utilized to be able to disengage from the ring as soon as the engine fired, even though it did not stay functioning.

When 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. When the drive unit is spun at a speed higher than what is achieved by the starter motor itself, for instance 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, hence unwanted starter disengagement can be prevented prior to a successful engine start.