Forklift Starter and Alternator

Forklift Starter and Alternator - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. When 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 positioned on the driveshaft and meshes the pinion utilizing the starter ring gear which is found on the flywheel of the engine.

When the starter motor starts 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 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 allows the pinion to transmit drive in just one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion remains engaged, like for example since the operator fails to release the key when the engine starts or if the solenoid remains engaged since there is a short. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above will prevent the engine from driving the starter. This significant step stops the starter from spinning so fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will stop using the starter as a generator if it was employed in the hybrid scheme mentioned prior. Typically a standard starter motor is designed for intermittent use that will stop it being used as a generator.

The electrical parts are made in order to work for approximately 30 seconds to avoid overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are designed to save weight and cost. This is the reason nearly all owner's handbooks utilized for automobiles recommend the operator to stop for a minimum of ten seconds after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over immediately.

In 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 works by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor begins turning, 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 enables the pinion to exceed 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.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was developed and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was an enhancement as the average Bendix drive used to be able to disengage from the ring once the engine fired, even though it did not stay running.

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. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for instance it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided before a successful engine start.