

Forklift Alternators and Starters

Forklift Starters and Alternators - A starter motor today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid mounted 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 that is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the engine flywheel.

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 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 only one direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion continues to be engaged, like for example for the reason that the driver did not release the key when the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This causes the pinion to spin independently of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is actually an important step because this particular type of back drive would enable the starter to spin so fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement will preclude the use of the starter as a generator if it was employed in the hybrid scheme mentioned prior. Normally an average starter motor is intended for intermittent use that would prevent it being utilized as a generator.

Thus, the electrical components are meant to function for just about under thirty seconds to be able to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical components are meant to save weight and cost. This is really the reason the majority of owner's handbooks used for automobiles suggest the driver to stop for a minimum of ten seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

The overrunning-clutch pinion was launched onto the market during the early part of the 1960's. Before the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft which consists of a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that was developed and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was an enhancement because the typical Bendix drive utilized to be able to disengage from the ring when 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. When the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for example it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented before a successful engine start.