

Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor nowadays 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 can be a permanent-magnet composition. 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 situated on the driveshaft and meshes the pinion with the starter ring gear that is seen on the engine flywheel.

As soon as the starter motor starts to turn, the solenoid closes the high-current contacts. When 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 means of an overrunning clutch. This permits the pinion to transmit drive in just one direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example as the operator did not release the key when the engine starts or if the solenoid remains engaged because there is a short. This actually causes the pinion to spin independently of its driveshaft.

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

The electrical components are made to be able to work for about thirty seconds so as to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save weight and cost. This is the reason most owner's manuals meant for vehicles suggest the driver to stop for at least ten seconds right after each ten or fifteen 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 1960's. Prior to the 1960's, a Bendix drive was used. This drive system works on a helically cut driveshaft that 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, thus engaging with the ring gear. As soon as 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.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which 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 in view of the fact that the standard Bendix drive utilized to be able to disengage from the ring as soon as the engine fired, even though it did not stay running.

The drive unit is forced forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. Then the starter motor becomes latched into the engaged position. Once the drive unit is spun at a speed higher than what is attained 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, thus unwanted starter disengagement could be prevented previous to a successful engine start.