

Forklift Starter and Alternator

Forklift Alternators and Starters - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid mounted on it. Once current from the starting battery is applied to the solenoid, mainly 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 with the starter ring gear that is seen on the engine flywheel.

Once 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 which opens the spring assembly 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 an overrunning clutch. This permits the pinion to transmit drive in just a single direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion remains engaged, for instance as the driver did not release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an essential step since this kind of back drive would allow the starter to spin really fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement will stop utilizing the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Normally a regular starter motor is designed for intermittent use which would stop it being used as a generator.

Hence, the electrical parts are meant to work for just about less than thirty seconds so as to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are designed to save cost and weight. This is the reason most owner's handbooks used for vehicles suggest the operator to stop for a minimum of 10 seconds right after each ten or fifteen 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 market in the early 1960's. Before the 1960's, a Bendix drive was used. This drive system operates on a helically cut driveshaft that consists of a starter drive pinion placed on it. As soon as the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to surpass 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 made. The overrunning-clutch design which was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was an improvement in view of the fact that the average Bendix drive used so as to disengage from the ring when the engine fired, although it did not stay running.

The drive unit is forced forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Next the starter motor becomes latched into the engaged position. As soon as the drive unit is spun at a speed higher than what is attained 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, thus unwanted starter disengagement can be avoided before a successful engine start.