

Forklift Alternators and Starters

Forklift Starter and Alternator - A starter motor today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed 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 which is located on the driveshaft and meshes the pinion with the starter ring gear which is found on the engine flywheel.

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 in order 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 means of an overrunning clutch. This allows the pinion to transmit drive in just one direction. Drive is transmitted in this particular method through the pinion to the flywheel ring gear. The pinion continues to be engaged, like for instance since the driver did not release the key when the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is an important step since this particular type of back drive would enable the starter to spin very fast that it could fly apart. Unless modifications were done, the sprag clutch arrangement will stop utilizing the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Typically a regular starter motor is intended for intermittent utilization which will stop it being utilized as a generator.

Thus, the electrical components are designed to be able to operate for roughly less than 30 seconds so as to avoid overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical parts are designed to save weight and cost. This is the reason nearly all owner's guidebooks for automobiles suggest the operator to pause for a minimum of 10 seconds right 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 market in the early part of the 1960's. Before the 1960's, a Bendix drive was utilized. This drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. When the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear allows the pinion to exceed the rotating speed of the starter. At this moment, 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 developed in the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was an improvement for the reason that the standard Bendix drive used so as to disengage from the ring as soon as the engine fired, even though it did not stay running.

As soon as 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. Once the drive unit is spun at a speed higher than what is attained by the starter motor itself, like for example it is backdriven by the running engine, and after that 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.