

Forklift Starter and Alternator

Forklift Starter and Alternator - The starter motor these days is usually either a series-parallel wound direct current electric motor that consists of a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. As soon as current from the starting battery is applied to the solenoid, mainly via 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 with the starter ring gear that is seen on the engine flywheel.

As soon as the starter motor begins to turn, the solenoid closes the high-current contacts. When 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 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 manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for example as the operator fails to release the key as soon as 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 stops the engine from driving the starter. This is an important step as this particular kind of back drive will enable the starter to spin really fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement will prevent making use of the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually a regular starter motor is designed for intermittent utilization that will stop it being used as a generator.

Thus, the electrical parts are intended to work for around under thirty seconds to be able to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical components are designed to save weight and cost. This is the reason nearly all owner's handbooks for automobiles suggest the driver to stop for a minimum of ten seconds after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was introduced onto the market during the early part of the 1960's. Previous to the 1960's, a Bendix drive was utilized. This particular drive system works on a helically cut driveshaft that has a starter drive pinion placed on it. When 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. When the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond the rotating speed of the starter. At this moment, 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 developed. 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 along with a set of flyweights in the body of the drive unit. This was better in view of the fact that the average Bendix drive utilized to be able to disengage from the ring once the engine fired, even if it did not stay functioning.

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