

Forklift Alternators and Starters

Forklift Starters and Alternators - A starter motor today is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. Once current from the starting battery is applied to the solenoid, basically via 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 using the starter ring gear which is seen on the flywheel of the engine.

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 that opens the spring assembly so as 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 only one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continues to be engaged, like for instance since the operator did not release the key when the engine starts or if the solenoid remains engaged since there is a short. This actually causes the pinion to spin independently of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is an important step since this type of back drive would enable the starter to spin really fast that it will fly apart. Unless modifications were made, the sprag clutch arrangement will prevent the use of the starter as a generator if it was employed in the hybrid scheme mentioned prior. Usually a standard starter motor is meant for intermittent use which would prevent it being utilized as a generator.

The electrical components are made to be able to function for more or less thirty seconds to be able to avoid overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are meant to save cost and weight. This is truly the reason most owner's manuals used for automobiles suggest the driver to pause for at least 10 seconds after every 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over right away.

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 particular drive system works on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly allows 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 enables the pinion to exceed 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 made. The overrunning-clutch design that was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights inside the body of the drive unit. This was an improvement for the reason that the average Bendix drive utilized 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 begins turning. Then 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, for example it is backdriven by the running engine, and afterward 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 avoided prior to a successful engine start.