

Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor of today is usually either a series-parallel wound direct current electric motor that has a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 situated on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the flywheel of the engine.

Once the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch that 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 means of an overrunning clutch. This permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion remains engaged, like for example because the driver 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.

The actions discussed above would prevent the engine from driving the starter. This vital step stops the starter from spinning really fast that it would fly apart. Unless modifications were made, the sprag clutch arrangement will preclude utilizing the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Typically a regular starter motor is designed for intermittent utilization which would stop it being utilized as a generator.

Hence, the electrical parts are designed to function for roughly under 30 seconds to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical components are intended to save cost and weight. This is the reason nearly all owner's instruction manuals used for automobiles suggest the driver to stop for a minimum of ten seconds after each and every 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 during the early part of the 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system functions on a helically cut driveshaft that consists of a starter drive pinion placed on it. When the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence 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 hence out of mesh with the ring gear.

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed and launched in the 1960s. 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 enhancement because the standard Bendix drive utilized in order to disengage from the ring as soon as the engine fired, although it did not stay functioning.

The drive unit is force forward by inertia on the helical shaft when the starter motor is engaged and begins turning. After that the starter motor becomes latched into the engaged position. When the drive unit is spun at a speed higher than what is achieved 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 enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be prevented previous to a successful engine start.