

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor these days 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 could 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 positioned on the driveshaft and meshes the pinion using the starter ring gear which is found on the engine flywheel.

As soon as 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 be able 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 permits the pinion to transmit drive in just one direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance for the reason that the driver fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is actually an important step as this particular kind of back drive will enable the starter to spin really fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent the use of the starter as a generator if it was used in the hybrid scheme discussed prior. Usually a standard starter motor is meant for intermittent utilization that will stop it being utilized as a generator.

Hence, the electrical components are designed to be able to work for just about less than thirty seconds so as to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are intended to save weight and cost. This is actually the reason most owner's instruction manuals intended for vehicles suggest the operator to stop for at least ten seconds after each and every ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over at once.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore 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 thus 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 made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights in the body of the drive unit. This was much better because the typical Bendix drive used so as to disengage from the ring as soon as the engine fired, though it did not stay running.

Once the starter motor is engaged and starts turning, the drive unit is forced forward on the helical shaft by inertia. It then 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, like 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 can be prevented before a successful engine start.