

Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor of today is typically either a series-parallel wound direct current electric motor which 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 located on the driveshaft and meshes the pinion using the starter ring gear which is seen on the engine flywheel.

When the starter motor starts to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid consists of 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 an overrunning clutch. This permits the pinion to transmit drive in just one direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance because the operator did not release the key as soon as the engine starts or if the solenoid remains engaged for the reason that there is a short. This causes the pinion to spin separately of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is an important step for the reason that this particular kind of back drive will enable the starter to spin very fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement will prevent the use of the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Normally a standard starter motor is intended for intermittent use that would stop it being used as a generator.

The electrical components are made to be able to work for about 30 seconds in order to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are intended to save weight and cost. This is truly the reason nearly all owner's manuals meant for automobiles suggest the operator to stop for a minimum of ten seconds after every ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore 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 thus 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 introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was an improvement in view of the fact that the standard Bendix drive used in order to disengage from the ring as soon as the engine fired, although it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft when the starter motor is engaged and starts turning. Next 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, like for instance it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be avoided before a successful engine start.