

Forklift Starters and Alternators

Forklift Starter and Alternator - The starter motor of today is normally 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. Once 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 situated on the driveshaft and meshes the pinion with the starter ring gear which is found on the engine flywheel.

When the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of 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 just a single direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion continuous to be 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 causes the pinion to spin separately of its driveshaft.

This aforesaid action stops the engine from driving the starter. This is actually an important step as this particular type of back drive will enable the starter to spin really fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement will stop using the starter as a generator if it was used in the hybrid scheme discussed earlier. Normally an average starter motor is meant for intermittent utilization which would prevent it being used as a generator.

The electrical components are made to operate for about 30 seconds to be able to avoid overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are designed to save cost and weight. This is truly the reason most owner's manuals for automobiles recommend the driver to pause for at least 10 seconds after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over at once.

The overrunning-clutch pinion was introduced onto the market in the early 1960's. Previous to the 1960's, a Bendix drive was used. This drive system works on a helically cut driveshaft that has a starter drive pinion placed on it. Once the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this point, 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 made. The overrunning-clutch design that was made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was a lot better in view of the fact that the standard Bendix drive utilized in order to disengage from the ring as soon as the engine fired, even though it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft as soon as the starter motor is engaged and starts 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 instance it is backdriven by the running engine, and after that 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 can be avoided prior to a successful engine start.