

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. When 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 which is positioned on the driveshaft and meshes the pinion with the starter ring gear which is found on the engine flywheel.

As soon as 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 which opens the spring assembly so as 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 an overrunning clutch. This permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular method through 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 stops the engine from driving the starter. This is an important step since this type of back drive would enable the starter to spin very fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent utilizing the starter as a generator if it was employed in the hybrid scheme discussed earlier. Normally an average starter motor is intended for intermittent use which will preclude it being used as a generator.

Therefore, the electrical components are designed to work for about under thirty seconds in order to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are intended to save weight and cost. This is the reason the majority of owner's manuals utilized for automobiles recommend the driver to pause for at least ten seconds right after every 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was launched onto the market during the early 1960's. Previous to the 1960's, a Bendix drive was utilized. This particular drive system works on a helically cut driveshaft that consists of a starter drive pinion placed on it. When the starter motor begins turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore 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 moment, 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 made in 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 along with a set of flyweights within the body of the drive unit. This was better in view of the fact that the typical Bendix drive utilized in order to disengage from the ring once the engine fired, even if it did not stay running.

When 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. As soon as 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 then 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 previous to a successful engine start.