

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor nowadays is typically either a series-parallel wound direct current electric motor which consists of a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is positioned on the driveshaft and meshes the pinion using the starter ring gear which is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. After the engine starts, the key operated switch is opened and a spring within the solenoid assembly pulls 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 only one direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion remains engaged, for example since the operator did not release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is an essential step as this particular kind of back drive will allow the starter to spin really fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement will preclude using the starter as a generator if it was employed in the hybrid scheme mentioned prior. Usually a regular starter motor is designed for intermittent use that will stop it being utilized as a generator.

Therefore, the electrical components are intended to be able to work for about less than thirty seconds in order to avoid overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are intended to save cost and weight. This is the reason most owner's manuals intended for automobiles recommend the driver to stop for at least 10 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 in the early 1960's. Previous to the 1960's, a Bendix drive was utilized. This drive system works on a helically cut driveshaft that has a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly enables 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 allows 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 made during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, made and launched during 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 better since the average Bendix drive used to be able to disengage from the ring once the engine fired, although it did not stay running.

When the starter motor is engaged and begins 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, for example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided prior to a successful engine start.