

Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor nowadays is normally either a series-parallel wound direct current electric motor that 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, mainly through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is situated 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, which 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 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 one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion remains engaged, for example for the reason that the operator did not release the key as soon as the engine starts or if the solenoid remains engaged since there is a short. This actually causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an important step for the reason that this particular type of back drive will allow the starter to spin so 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 prior. Normally an average starter motor is intended for intermittent use that would stop it being utilized as a generator.

Hence, the electrical components are designed to operate for around less than 30 seconds to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are meant to save weight and cost. This is truly the reason most owner's handbooks for vehicles suggest the driver to pause for at least 10 seconds after each and every ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was introduced onto the market in the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This drive system functions 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 allows it to ride forward on the helix, thus engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to surpass 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 developed and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights in the body of the drive unit. This was better in view of the fact that the average Bendix drive utilized so as to disengage from the ring once the engine fired, although it did not stay functioning.

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. When the drive unit is spun at a speed higher than what is attained 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 allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided previous to a successful engine start.