

Forklift Starter and Alternator

Forklift Alternators and Starters - A starter motor today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. Once current from the starting battery is applied to the solenoid, basically through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the engine flywheel.

Once the starter motor begins 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 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 allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion continues to be engaged, for example because 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 above mentioned action prevents the engine from driving the starter. This is actually an important step in view of the fact that this type of back drive will enable the starter to spin really fast that it will fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude using the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Typically a standard starter motor is meant for intermittent use that will preclude it being used as a generator.

Hence, the electrical components are designed to operate for around less than 30 seconds so as to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical parts are designed to save weight and cost. This is the reason the majority of owner's instruction manuals utilized for vehicles recommend the driver to pause for a minimum of ten seconds right after each ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over instantly.

The overrunning-clutch pinion was introduced onto the market during the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This particular drive system functions on a helically cut driveshaft that consists of a starter drive pinion placed on it. As soon as the starter motor begins turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was made and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was better because the standard Bendix drive used to disengage from the ring as soon as the engine fired, although 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. Afterward the starter motor becomes latched into the engaged position. As soon as 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, therefore unwanted starter disengagement could be prevented previous to a successful engine start.