

Forklift Alternators and Starters

Forklift Starters and Alternators - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid mounted on it. 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 located on the driveshaft and meshes the pinion with 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. When 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 an overrunning clutch. This allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance because the operator did not release the key as soon as the engine starts or if the solenoid remains engaged for the reason that there is a short. This causes the pinion to spin separately of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is an essential step because this kind of back drive would allow the starter to spin so 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 utilized in the hybrid scheme discussed prior. Normally a regular starter motor is intended for intermittent use which will preclude it being used as a generator.

The electrical parts are made to be able to work for roughly 30 seconds so as to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are meant to save cost and weight. This is truly the reason nearly all owner's manuals used for automobiles suggest the operator to stop for a minimum of ten seconds after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was launched 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. As soon as the starter motor begins 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 enables the pinion to go beyond the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed and launched during the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights in the body of the drive unit. This was much better in view of the fact that the average Bendix drive utilized to be able to disengage from the ring when the engine fired, though it did not stay functioning.

Once 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, for example it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be prevented prior to a successful engine start.