

Forklift Starter and Alternator

Forklift Alternators and Starters - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid mounted on it. As soon as current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever which 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.

Once the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch that opens the spring assembly in order 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 manner via the pinion to the flywheel ring gear. The pinion remains engaged, for example as the operator fails to release the key when the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This actually causes the pinion to spin separately of its driveshaft.

The actions discussed above would stop the engine from driving the starter. This important step prevents the starter from spinning really fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Typically an average starter motor is intended for intermittent use which will stop it being utilized as a generator.

Therefore, the electrical components are meant to operate for approximately less than thirty seconds so as to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are designed to save weight and cost. This is the reason nearly all owner's handbooks intended for vehicles recommend the operator to stop for at least 10 seconds after every 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was introduced onto the market during the early 1960's. Previous 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 spinning, 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 go beyond 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 referred to as the Bendix Folo-Thru drive, made and introduced 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 an improvement for the reason that the standard Bendix drive used to be able to disengage from the ring when the engine fired, although it did not stay functioning.

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. When the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for instance 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 could be avoided prior to a successful engine start.