

Forklift Starters and Alternators

Forklift Alternators and Starters - The starter motor these days is normally either a series-parallel wound direct current electric motor which has a starter solenoid, which is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 which is located on the driveshaft and meshes the pinion using the starter ring gear that is seen on the flywheel of the engine.

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 inside 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 just one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion remains engaged, for instance in view of the fact that the operator fails to release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above would stop the engine from driving the starter. This significant step prevents the starter from spinning very fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement will stop the use of the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Typically a standard starter motor is meant for intermittent utilization which would preclude it being used as a generator.

The electrical parts are made in order to function for more or less 30 seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save cost and weight. This is truly the reason nearly all owner's handbooks used for automobiles suggest the driver to stop for a minimum of ten seconds right after each ten or fifteen seconds of cranking the engine, if 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. Before the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft which consists of a starter drive pinion placed on it. Once the starter motor starts turning, 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 surpass the rotating speed of the starter. At this point, 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 referred to as the Bendix Folo-Thru drive, made and launched during the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights inside the body of the drive unit. This was an enhancement for the reason that the average Bendix drive used to be able to disengage from the ring as soon as the engine fired, though it did not stay running.

The drive unit is forced forward by inertia on the helical shaft when the starter motor is engaged and starts turning. Afterward the starter motor becomes latched into the engaged position. Once the drive unit is spun at a speed higher than what is achieved 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 permits the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided prior to a successful engine start.