

Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor nowadays is typically either a series-parallel wound direct current electric motor that includes 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, basically via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the engine flywheel.

When the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch that opens the spring assembly to pull 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 permits the pinion to transmit drive in just a single direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance in view of the fact that the operator fails to release the key when 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 stops the engine from driving the starter. This is actually an essential step since this particular kind of back drive would enable the starter to spin very fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was employed in the hybrid scheme discussed earlier. Normally a standard starter motor is intended for intermittent use that will prevent it being used as a generator.

Thus, the electrical components are intended to be able to function for about under 30 seconds in order 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 nearly all owner's handbooks meant for vehicles suggest the operator to stop for a minimum of 10 seconds after each ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over at once.

The overrunning-clutch pinion was introduced onto the market in the early 1960's. Prior 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. When 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 allows the pinion to exceed the rotating speed of the starter. At this instant, 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 that was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was much better since the typical Bendix drive utilized 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 as soon as the starter motor is engaged and begins turning. Then 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 instance it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided before a successful engine start.