

Forklift Starters and Alternators

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

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 which opens the spring assembly 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 means of an overrunning clutch. This allows 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 remains engaged, for instance in view of the fact that the operator did not release the key when the engine starts or if there is a short and the solenoid remains engaged. This 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 would fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was used in the hybrid scheme mentioned prior. Typically a regular starter motor is designed for intermittent utilization which will prevent it being used as a generator.

The electrical parts are made to be able to function for approximately 30 seconds to be able to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical parts are meant to save cost and weight. This is the reason nearly all owner's handbooks intended for automobiles suggest the driver to stop for a minimum of 10 seconds right after each and every ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over right away.

During the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor starts turning, the inertia of the drive pinion assembly allows 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 moment, the drive pinion is forced back down the helical shaft and therefore 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 made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights within the body of the drive unit. This was better as the average Bendix drive used so as to disengage from the ring once the engine fired, although it did not stay running.

As soon as 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 instance it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided before a successful engine start.