

Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor of today is usually either a series-parallel wound direct current electric motor that consists of 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, mainly via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is located on the driveshaft and meshes the pinion using the starter ring gear that is found on the engine flywheel.

When the starter motor begins to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has 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 an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example in view of the fact that the driver fails to release the key once the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is an essential step since this type of back drive will allow the starter to spin very fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement would prevent using the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually a standard starter motor is designed for intermittent utilization that would prevent it being used as a generator.

Therefore, the electrical components are intended to operate for just about under 30 seconds so as to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are designed to save weight and cost. This is actually the reason nearly all owner's handbooks for vehicles suggest the driver to stop for a minimum of 10 seconds right after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. When 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 exceed the rotating speed of the starter. At this moment, 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 made during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and introduced in the 1960s. The Folo-Thru drive has 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 average Bendix drive utilized so as to disengage from the ring as soon as the engine fired, even if it did not stay functioning.

The drive unit is force forward by inertia on the helical shaft when the starter motor is engaged and starts turning. After that 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 next 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 previous to a successful engine start.