

Forklift Starters and Alternators

Forklift Starter and Alternator - A starter motor today is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. As soon as 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 which is located on the driveshaft and meshes the pinion with the starter ring gear which is found on the flywheel of the engine.

Once the starter motor begins 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 so as 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 an overrunning clutch. This allows the pinion to transmit drive in just a single direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion remains engaged, like for example in view of the fact that the driver did not release the key once 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 discussed above will stop the engine from driving the starter. This important step prevents the starter from spinning so fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement would preclude making use of the starter as a generator if it was used in the hybrid scheme mentioned earlier. Normally a regular starter motor is meant for intermittent utilization that would stop it being used as a generator.

Therefore, the electrical parts are meant to operate for just about under 30 seconds in order to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are designed to save cost and weight. This is the reason nearly all owner's handbooks utilized for automobiles recommend the operator to pause for a minimum of 10 seconds after every ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over instantly.

During the early 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. As soon as 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. 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 therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which 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 in the body of the drive unit. This was much better for the reason that the standard Bendix drive used to be able to disengage from the ring once the engine fired, even if it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft when the starter motor is engaged and begins turning. Next the starter motor becomes latched into the engaged position. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, for example it is backdriven by the running engine, and next 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 could be avoided prior to a successful engine start.