

Forklift Starters and Alternators

Forklift Starter and Alternator - Today's starter motor is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid mounted on it. When 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 that is situated on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the engine flywheel.

Once the starter motor starts to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid consists of 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 an overrunning clutch. This allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance for the reason that the driver did not release the key when the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin independently of its driveshaft.

The actions mentioned above would prevent the engine from driving the starter. This important step prevents the starter from spinning really fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement would stop the use of the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Normally an average starter motor is intended for intermittent utilization which would preclude it being utilized as a generator.

Thus, the electrical components are designed to operate for just about under 30 seconds in order to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are designed to save cost and weight. This is truly the reason most owner's handbooks meant for vehicles recommend the driver to pause for at least ten seconds after each and every 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was launched onto the market in the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This particular drive system functions on a helically cut driveshaft that consists of a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design that was made and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights inside the body of the drive unit. This was better since the standard Bendix drive used to be able to disengage from the ring when the engine fired, even if 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. Afterward the starter motor 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, like for instance 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, hence unwanted starter disengagement could be prevented previous to a successful engine start.