

Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor these days is normally either a series-parallel wound direct current electric motor which has a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. Once current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is situated on the driveshaft and meshes the pinion with the starter ring gear that is seen on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. After the engine starts, the key operated switch is opened and a spring in the solenoid assembly pulls 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 just a single direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example for the reason that the operator fails to release the key when the engine starts or if the solenoid remains engaged for the reason that 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 in view of the fact that this particular type of back drive would enable the starter to spin so fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement will preclude using the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Typically an average starter motor is intended for intermittent utilization that would prevent it being used as a generator.

Therefore, the electrical components are meant to function for just about less than 30 seconds to be able to avoid overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical parts are intended to save weight and cost. This is really the reason most owner's manuals meant for vehicles recommend the operator to stop for at least 10 seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over instantly.

The overrunning-clutch pinion was introduced onto the market during the early part of the 1960's. Before the 1960's, a Bendix drive was utilized. This particular drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. Once the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and introduced during 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 better as the average Bendix drive used to disengage from the ring as soon as the engine fired, although it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft as soon as 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 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 enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be avoided prior to a successful engine start.