

Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor these days is normally either a series-parallel wound direct current electric motor which consists of 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, basically 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 using the starter ring gear which is found on the flywheel of the engine.

When the starter motor begins to turn, the solenoid closes the high-current contacts. As soon as 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 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 method via the pinion to the flywheel ring gear. The pinion remains engaged, for example as the driver 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 discussed above will stop the engine from driving the starter. This significant step stops the starter from spinning so fast that it can fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude using the starter as a generator if it was employed in the hybrid scheme discussed earlier. Typically a regular starter motor is designed for intermittent utilization that would prevent it being utilized as a generator.

The electrical components are made in order to function for roughly thirty seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are designed to save cost and weight. This is actually the reason most owner's instruction manuals used for vehicles recommend the operator to pause for a minimum of 10 seconds after each and every 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was launched onto the market during the early part of the 1960's. Previous 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. When the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus 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 instant, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

The development of Bendix drive was made during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, made and introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights in the body of the drive unit. This was better in view of the fact that the average Bendix drive utilized in order to disengage from the ring once the engine fired, though 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 attained by the starter motor itself, for example it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented prior to a successful engine start.