

## Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor nowadays is normally either a series-parallel wound direct current electric motor that has a starter solenoid, that is similar to a relay mounted on it, or it could 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 situated on the driveshaft and meshes the pinion with the starter ring gear that is found on the engine flywheel.

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 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 a single direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion remains engaged, for instance for the reason that the driver did not release the key once the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

The actions discussed above would stop the engine from driving the starter. This significant step stops the starter from spinning so fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Typically a standard starter motor is intended for intermittent use which would prevent it being used as a generator.

Therefore, the electrical parts are designed to function for roughly under thirty seconds to avoid overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are intended to save weight and cost. This is the reason most owner's handbooks intended for vehicles recommend the operator to pause for a minimum of 10 seconds after every ten or fifteen seconds of cranking the engine, whenever trying to start an engine that 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 spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore 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 point, 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 known as the Bendix Folo-Thru drive, developed and introduced during 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 an improvement in view of the fact that the average Bendix drive utilized in order to disengage from the ring when the engine fired, even if it did not stay running.

When the starter motor is engaged and starts turning, the drive unit is forced forward on the helical shaft by inertia. It then 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, 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 avoided prior to a successful engine start.