

## Forklift Starters and Alternators

Forklift Starters and Alternators - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid mounted on it. Once 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 which is situated on the driveshaft and meshes the pinion utilizing 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 inside the solenoid assembly pulls 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 means of an overrunning clutch. This allows the pinion to transmit drive in only a single direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance because the operator did not release the key when 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 mentioned above will prevent the engine from driving the starter. This significant step prevents the starter from spinning very fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement will stop utilizing the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Typically a standard starter motor is designed for intermittent use which will preclude it being used as a generator.

Hence, the electrical components are intended to function for more or less under thirty seconds to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are designed to save weight and cost. This is really the reason most owner's manuals meant for automobiles suggest the operator to pause for at least ten seconds after each 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over at once.

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 has a starter drive pinion placed on it. As soon as the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear allows 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 hence out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was developed and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was a lot better as the standard Bendix drive used to disengage from the ring as soon as the engine fired, though it did not stay running.

The drive unit is forced forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Next the starter motor becomes latched into the engaged position. Once 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 after that the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement could be prevented before a successful engine start.