

## Forklift Starters and Alternators

Forklift Alternators and Starters - A starter motor today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid installed 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 which is located on the driveshaft and meshes the pinion with the starter ring gear which is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. Once 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 one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, like for instance for the reason that the driver fails to release the key as soon as 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 mentioned above would stop the engine from driving the starter. This important step stops the starter from spinning very fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would stop using the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Typically an average starter motor is designed for intermittent use which would prevent it being used as a generator.

Therefore, the electrical parts are intended to be able to work for around under thirty seconds to be able to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are meant to save weight and cost. This is the reason most owner's handbooks meant for vehicles recommend the driver to stop for a minimum of 10 seconds after every ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over instantly.

The overrunning-clutch pinion was launched onto the market in the early 1960's. Prior to the 1960's, a Bendix drive was used. This drive system functions on a helically cut driveshaft which consists of a starter drive pinion placed on it. As soon as the starter motor starts turning, the inertia of the drive pinion assembly enables 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 exceed the rotating speed of the starter. At this moment, 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 developed during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was a lot better in view of the fact that the typical Bendix drive used 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 starts turning. Afterward the starter motor becomes latched into the engaged position. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for example it is backdriven by the running engine, and next 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.