## Forklift Starter and Alternator

Forklift Alternators and Starters - The starter motor of today is typically either a series-parallel wound direct current electric motor that 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 via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is positioned on the driveshaft and meshes the pinion using the starter ring gear that is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which begins to turn. When the engine starts, the key operated switch is opened and a spring within 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 only one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance as the operator fails to release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is actually an important step as this particular kind of back drive would allow the starter to spin really fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement would prevent utilizing the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Normally an average starter motor is meant for intermittent utilization that would stop it being utilized as a generator.

The electrical parts are made in order to operate for approximately thirty seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical parts are meant to save weight and cost. This is really the reason most owner's instruction manuals for automobiles recommend the operator to stop for a minimum of 10 seconds after every 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over instantly.

The overrunning-clutch pinion was introduced onto the marked during the early part of the 1960's. Prior to the 1960's, a Bendix drive was utilized. This drive system works on a helically cut driveshaft which consists of a starter drive pinion placed on it. As soon as the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore 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 moment, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design that was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was an improvement as the typical Bendix drive utilized so as to disengage from the ring as soon as the engine fired, even though it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Afterward the starter motor becomes latched into the engaged position. Once 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 afterward the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented previous to a successful engine start.