## Forklift Alternators and Starters

Forklift Starter and Alternator - The starter motor these days is normally 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 can be a permanent-magnet composition. 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 situated on the driveshaft and meshes the pinion with the starter ring gear which is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. Once the engine starts, the key operated switch is opened and a spring in 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 method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example for the reason that the operator did not release the key once the engine starts or if the solenoid remains engaged for the reason that there is a short. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above would stop the engine from driving the starter. This important step prevents the starter from spinning so fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement will preclude making use of the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Typically a regular starter motor is designed for intermittent utilization which would stop it being utilized as a generator.

The electrical components are made to work for more or less thirty seconds to prevent overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are designed to save cost and weight. This is the reason nearly all owner's manuals for automobiles recommend the driver to stop for a minimum of 10 seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to 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 begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. As soon as 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 thus out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights inside the body of the drive unit. This was better in view of the fact that the typical Bendix drive utilized to disengage from the ring as soon as the engine fired, even if it did not stay functioning.

Once the starter motor is engaged and begins turning, the drive unit is forced forward on the helical shaft by inertia. It then 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, for example it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided before a successful engine start.