

## Forklift Alternators and Starters

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

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 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 just one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, like for example as the driver fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is actually an essential step for the reason that this particular type of back drive would enable the starter to spin very fast that it will fly apart. Unless modifications were made, the sprag clutch arrangement will preclude using the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Usually a standard starter motor is intended for intermittent use which will prevent it being used as a generator.

The electrical parts are made to function for about 30 seconds to be able to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are intended to save cost and weight. This is the reason nearly all owner's manuals for vehicles recommend the operator to stop for a minimum of 10 seconds right after each and every 10 or 15 seconds of cranking the engine, whenever trying to start an engine which does not turn over immediately.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was used. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor begins turning, the inertia of the drive pinion assembly allows 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 surpass 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 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 inside the body of the drive unit. This was an improvement in view of the fact that the standard Bendix drive utilized in order to disengage from the ring as soon as the engine fired, although it did not stay functioning.

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. 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 after that 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 could be avoided prior to a successful engine start.