

## Forklift Starter and Alternator

Forklift Starters and Alternators - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. Once current from the starting battery is applied to the solenoid, basically via 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 that 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 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 method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example in view of the fact that the operator did not release the key as soon as the engine starts or if the solenoid remains engaged since there is a short. This causes the pinion to spin independently of its driveshaft.

The actions mentioned above will stop the engine from driving the starter. This important step stops the starter from spinning so fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement would prevent the use of the starter as a generator if it was utilized in the hybrid scheme discussed prior. Usually a regular starter motor is intended for intermittent use which would stop it being used as a generator.

Therefore, the electrical parts are intended to operate for approximately less than 30 seconds to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical components are meant to save cost and weight. This is the reason nearly all owner's manuals meant for automobiles 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 that does not turn over immediately.

The overrunning-clutch pinion was introduced onto the market during the early part of the 1960's. Previous to the 1960's, a Bendix drive was used. This drive system functions on a helically cut driveshaft which has a starter drive pinion placed on it. When the starter motor begins 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 allows the pinion to go beyond the rotating speed of the starter. At this instant, 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 made and launched 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 better for the reason that the standard Bendix drive used to be able to disengage from the ring as soon as the engine fired, even though it did not stay functioning.

As soon as 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. When 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 then the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be prevented before a successful engine start.