

## Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor these days 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 can be a permanent-magnet composition. As soon as 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 that is situated on the driveshaft and meshes the pinion using the starter ring gear that is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which begins to turn. After 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 means of an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance as the operator fails to release the key when 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 above mentioned action stops the engine from driving the starter. This is an essential step as this kind of back drive would allow the starter to spin so fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would stop utilizing the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Normally a regular starter motor is intended for intermittent utilization which would stop it being utilized as a generator.

The electrical parts are made so as to function for more or less thirty seconds to be able to avoid overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are meant to save weight and cost. This is really the reason the majority of owner's handbooks utilized for vehicles suggest the driver to stop for a minimum of 10 seconds after every ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

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 starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was developed and introduced during 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 as 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 running.

The drive unit is force forward by inertia on the helical shaft when the starter motor is engaged and starts turning. Next 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 instance it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided previous to a successful engine start.