

Forklift Alternators and Starters

Forklift Alternators and Starters - Today's starter motor is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid mounted on it. As soon as current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is positioned 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, that starts 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 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 remains engaged, like for instance since the operator did not 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.

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

The electrical parts are made in order to work for approximately 30 seconds in order to avoid overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are intended to save cost and weight. This is the reason nearly all owner's guidebooks used for vehicles recommend the driver to stop for at least ten seconds right after every ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was introduced onto the market in the early part of the 1960's. Prior to the 1960's, a Bendix drive was utilized. This particular drive system functions on a helically cut driveshaft that consists of a starter drive pinion placed on it. As soon as the starter motor starts turning, 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 enables the pinion to exceed 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.

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 inside the body of the drive unit. This was better as the standard Bendix drive utilized so as to disengage from the ring as soon as the engine fired, even though 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 next 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 prevented before a successful engine start.