

Forklift Starter and Alternator

Forklift Alternators and Starters - The starter motor these days is usually either a series-parallel wound direct current electric motor which has a starter solenoid, that 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 that pushes out the drive pinion which is situated on the driveshaft and meshes the pinion with the starter ring gear that is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which 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 particular action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by an overrunning clutch. This permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example since the driver did not release the key once 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 mentioned above would stop the engine from driving the starter. This significant step prevents the starter from spinning very fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement will preclude the use of the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Usually a standard starter motor is intended for intermittent utilization that will stop it being used as a generator.

The electrical parts are made so as to operate for about 30 seconds to be able to avoid overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical parts are intended to save weight and cost. This is actually the reason most owner's manuals for vehicles recommend the operator to pause for at least ten seconds after each ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over immediately.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was used. The Bendix system operates 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, therefore 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 point, 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 developed. The overrunning-clutch design which was made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was better in view of the fact that the standard Bendix drive utilized to be able to disengage from the ring as soon as the engine fired, although 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. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, 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 permits the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided prior to a successful engine start.