

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor these days is usually either a series-parallel wound direct current electric motor that consists of 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, 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 which is seen on the flywheel of the engine.

When the starter motor begins to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid has a key operated switch that opens the spring assembly to pull 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 just one direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance since the operator fails to release the key as soon as the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This causes the pinion to spin independently of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is an essential step in view of the fact that this particular type of back drive would allow the starter to spin very fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement would prevent using the starter as a generator if it was used in the hybrid scheme mentioned prior. Usually a regular starter motor is intended for intermittent utilization that will stop it being used as a generator.

The electrical components are made to be able to operate for around 30 seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are meant to save weight and cost. This is the reason most owner's guidebooks utilized for automobiles suggest the operator to pause for a minimum of ten seconds right after every ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over at once.

The overrunning-clutch pinion was launched onto the market in the early 1960's. Previous to the 1960's, a Bendix drive was utilized. This drive system operates on a helically cut driveshaft which consists of a starter drive pinion placed on it. 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 allows the pinion to exceed 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 that was made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights within the body of the drive unit. This was an enhancement since the average Bendix drive used to be able to disengage from the ring once the engine fired, even if it did not stay running.

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