

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor of today is normally either a series-parallel wound direct current electric motor that has a starter solenoid, that 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, mainly through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is located on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the flywheel of the engine.

When the starter motor starts 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 be able 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 allows the pinion to transmit drive in just one direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example for the reason that the operator fails to release the key once the engine starts or if the solenoid remains engaged because there is a short. This actually causes the pinion to spin separately of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is actually an essential step since this particular kind of back drive will enable the starter to spin so fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent the use of the starter as a generator if it was used in the hybrid scheme mentioned earlier. Usually a standard starter motor is intended for intermittent utilization which would preclude it being used as a generator.

The electrical parts are made in order to operate for around thirty seconds so as to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are intended to save weight and cost. This is the reason the majority of owner's guidebooks for vehicles recommend the operator to pause for at least ten seconds right after every 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over right away.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was used. The Bendix system works 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, hence 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 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 introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was a lot better as the average Bendix drive used so as to disengage from the ring when the engine fired, although it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. After that the starter motor becomes latched into the engaged position. When 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 afterward the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be avoided previous to a successful engine start.