

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor these days is typically either a series-parallel wound direct current electric motor which has a starter solenoid, which is similar to a relay mounted on it, or it can be a permanent-magnet composition. Once current from the starting battery is applied to the solenoid, basically through 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 using 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. Once the engine has started, the solenoid has a key operated switch that opens the spring assembly in order 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 an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance in view of the fact that the operator fails to release the key once the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is actually an essential step since this particular type of back drive will allow the starter to spin very fast that it can fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude the use of the starter as a generator if it was used in the hybrid scheme discussed earlier. Typically a standard starter motor is designed for intermittent use that will prevent it being used as a generator.

The electrical components are made to be able to work for around 30 seconds to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are meant to save cost and weight. This is truly the reason nearly all owner's instruction manuals utilized for automobiles suggest the driver to pause for a minimum of 10 seconds right after each and 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 introduced onto the market in the early 1960's. Prior to the 1960's, a Bendix drive was used. This particular drive system functions on a helically cut driveshaft which has 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, hence engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond the rotating speed of the starter. At this moment, 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 made. The overrunning-clutch design that was developed and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was better for the reason that the average Bendix drive used to be able to disengage from the ring as soon as the engine fired, although it did not stay running.

When 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, like for instance it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be avoided prior to a successful engine start.