

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor of today is typically 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 could 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 which pushes out the drive pinion which is situated on the driveshaft and meshes the pinion with the starter ring gear which is found on the engine flywheel.

Once the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch that opens the spring assembly so as to pull 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 an overrunning clutch. This permits the pinion to transmit drive in just a single direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example because the operator did not release the key when the engine starts or if the solenoid remains engaged for the reason that 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 for the reason that this kind of back drive will allow the starter to spin really fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement would preclude the use of the starter as a generator if it was used in the hybrid scheme mentioned earlier. Normally a regular starter motor is designed for intermittent use that will preclude it being used as a generator.

The electrical components are made to function for approximately thirty seconds so as to prevent overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are meant to save weight and cost. This is really the reason the majority of owner's guidebooks intended for vehicles suggest the operator to stop for a minimum of 10 seconds right after each 10 or 15 seconds of cranking the engine, whenever trying to start an engine which does not turn over instantly.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was utilized. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor begins 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 allows the pinion to exceed the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and therefore 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 made and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was an enhancement since the standard Bendix drive utilized so as to disengage from the ring as soon as the engine fired, although it did not stay running.

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. Once 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 permits the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided before a successful engine start.