

Forklift Alternators and Starters

Forklift Starters and Alternators - A starter motor today is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid installed on it. As soon as current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is located on the driveshaft and meshes the pinion with the starter ring gear that is found on the flywheel of the engine.

As soon as the starter motor starts 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 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 a single direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion continues to be engaged, like for instance for the reason that the operator did not release the key when 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.

The actions mentioned above would prevent the engine from driving the starter. This vital step stops the starter from spinning very fast that it could fly apart. Unless modifications were done, the sprag clutch arrangement will preclude the use of the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually a standard starter motor is meant for intermittent use which will stop it being used as a generator.

The electrical components are made to be able to work for more or less 30 seconds so as to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save weight and cost. This is really the reason most owner's manuals intended for vehicles suggest the operator to stop for a minimum of 10 seconds right after each and every 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over instantly.

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 utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. 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 therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed and launched in 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 a lot better in view of the fact that the typical Bendix drive used in order to disengage from the ring as soon as the engine fired, although it did not stay functioning.

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. 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 allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided prior to a successful engine start.