

Forklift Alternators and Starters

Forklift Alternators and Starters - Today's starter motor is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. 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 positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the engine flywheel.

When the starter motor begins to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has 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 allows 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, for instance in view of the fact that the driver did not release the key once 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.

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

The electrical components are made so as to operate for approximately 30 seconds to avoid overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are intended to save weight and cost. This is actually the reason nearly all owner's guidebooks meant for automobiles suggest the operator to stop for at least 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 right away.

During the early 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. Once the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. Once 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 hence 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 during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was a lot better since the standard Bendix drive utilized in order to disengage from the ring as soon as 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 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, thus unwanted starter disengagement could be prevented prior to a successful engine start.