

Forklift Starters and Alternators

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

The solenoid closes the high-current contacts for the starter motor, that starts to turn. After the engine starts, the key operated switch is opened and a spring in the solenoid assembly pulls 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 allows the pinion to transmit drive in just a single direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion remains engaged, like for example since the driver did not release the key once the engine starts or if the solenoid remains engaged in view of the fact 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 important step as this kind of back drive would enable the starter to spin really fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement would prevent utilizing the starter as a generator if it was made use of in the hybrid scheme mentioned prior. Normally an average starter motor is intended for intermittent utilization that will prevent it being used as a generator.

Hence, the electrical components are meant to be able to function for approximately under 30 seconds to be able to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical components are intended to save cost and weight. This is really the reason most owner's handbooks used for automobiles suggest the operator to stop for at least 10 seconds after every 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over immediately.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows 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.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design that was made and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights in the body of the drive unit. This was a lot better in view of the fact that the average Bendix drive used so as to disengage from the ring once the engine fired, even if it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft when the starter motor is engaged and begins turning. Then the starter motor 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 next 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 avoided prior to a successful engine start.