

Forklift Alternators and Starters

Forklift Alternators and Starters - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor together 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 located on the driveshaft and meshes the pinion using the starter ring gear that is seen on the engine flywheel.

As soon as the starter motor starts to turn, the solenoid closes the high-current contacts. As soon as 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 means of an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example as the operator did not release the key as soon as the engine starts or if the solenoid remains engaged as there is a short. This causes the pinion to spin separately of its driveshaft.

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

The electrical components are made so as to operate for about 30 seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are intended to save cost and weight. This is actually the reason most owner's instruction manuals used for vehicles suggest the driver to pause for at least 10 seconds right after every ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over immediately.

During the early part of the 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. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to surpass the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, developed and launched during the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was better since the typical Bendix drive utilized to disengage from the ring as soon as the engine fired, even if it did not stay running.

The drive unit if force forward by inertia on the helical shaft as soon as the starter motor is engaged and begins turning. Next the starter motor becomes latched into the engaged position. When 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 then the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be prevented previous to a successful engine start.