

Forklift Alternators and Starters

Forklift Starters and Alternators - Today's starter motor is normally 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, basically through 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 using the starter ring gear which is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. When 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 permits the pinion to transmit drive in just a single direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example for the reason that the operator did not release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

The actions discussed above would stop the engine from driving the starter. This important step stops the starter from spinning so fast that it will fly apart. Unless adjustments were done, the sprag clutch arrangement would prevent making use of the starter as a generator if it was used in the hybrid scheme discussed prior. Normally a standard starter motor is meant for intermittent utilization that would prevent it being utilized as a generator.

Therefore, the electrical parts are meant to function for roughly under thirty seconds to be able to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are intended to save cost and weight. This is really the reason nearly all owner's instruction manuals for automobiles recommend the driver to stop for at least 10 seconds right after every ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over instantly.

The overrunning-clutch pinion was introduced onto the market during the early 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system works on a helically cut driveshaft that has a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear allows the pinion to surpass 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.

The development of Bendix drive was developed in the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights in the body of the drive unit. This was better for the reason that the standard Bendix drive utilized in order to disengage from the ring once 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. As soon as the drive unit is spun at a speed higher than what is achieved 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 enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented previous to a successful engine start.