

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor of today is normally either a series-parallel wound direct current electric motor which includes a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. As soon as 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 that 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, which begins to turn. When the engine starts, the key operated switch is opened and a spring within 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 one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance because the driver fails to release the key as soon as 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.

This above mentioned action stops the engine from driving the starter. This is an important step in view of the fact that this type of back drive would enable the starter to spin really fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude using the starter as a generator if it was employed in the hybrid scheme mentioned prior. Normally a standard starter motor is designed for intermittent utilization which would preclude it being used as a generator.

The electrical parts are made to be able to work for approximately 30 seconds to be able to avoid overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are meant to save weight and cost. This is the reason most owner's guidebooks meant for automobiles recommend the driver to pause for a minimum of 10 seconds right after each and every ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was launched onto the market during the early 1960's. Prior to the 1960's, a Bendix drive was used. This drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. When the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. When 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 therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was better as the standard Bendix drive utilized to be able to disengage from the ring once the engine fired, even if 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. Once the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be prevented previous to a successful engine start.