

Forklift Starter and Alternator

Forklift Starter and Alternator - The starter motor nowadays is usually either a series-parallel wound direct current electric motor which consists of a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. Once current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is located on the driveshaft and meshes the pinion using the starter ring gear which is seen on the flywheel of the engine.

As soon as the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch which opens the spring assembly to be able 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 permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example in view of the fact that the driver fails to release the key as soon as the engine starts or if the solenoid remains engaged for the reason that there is a short. This causes the pinion to spin independently of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is actually an important step for the reason that this particular type of back drive would allow the starter to spin really fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement will prevent using the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Normally a standard starter motor is intended for intermittent utilization that will prevent it being used as a generator.

Thus, the electrical components are meant to work for approximately under thirty seconds in order to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are meant to save weight and cost. This is actually the reason most owner's instruction manuals intended for automobiles suggest the driver to pause for at least ten seconds right after every 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over instantly.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous 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 turning, 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 exceed 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 made during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and launched during the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was much better in view of the fact that the typical Bendix drive used to be able to disengage from the ring when the engine fired, even though it did not stay functioning.

As soon as 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. Once the drive unit is spun at a speed higher than what is achieved by the starter motor itself, for instance it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided previous to a successful engine start.