

Forklift Starter and Alternator

Forklift Starter and Alternator - A starter motor today is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. When current from the starting battery is applied to the solenoid, mainly 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 utilizing the starter ring gear that is seen on the engine flywheel.

Once 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 which opens the spring assembly in order 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 particular way via the pinion to the flywheel ring gear. The pinion remains engaged, like for example as 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 separately of its driveshaft.

The actions mentioned above will prevent the engine from driving the starter. This vital step stops the starter from spinning very fast that it would fly apart. Unless modifications were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was made use of in the hybrid scheme discussed prior. Normally an average starter motor is meant for intermittent utilization which will prevent it being utilized as a generator.

Hence, the electrical parts are meant to be able to operate for roughly less than thirty seconds to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are designed to save weight and cost. This is the reason nearly all owner's guidebooks used for automobiles suggest the operator to pause for a minimum of 10 seconds after each ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was utilized. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed 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 an enhancement as the typical Bendix drive utilized so as to disengage from the ring as soon as the engine fired, although it did not stay running.

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. When the drive unit is spun at a speed higher than what is attained by the starter motor itself, for instance it is backdriven by the running engine, and then 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 can be prevented before a successful engine start.