

Forklift Starters and Alternators

Forklift Starters and Alternators - Today's starter motor is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. Once current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is situated on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the engine flywheel.

When 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 that opens the spring assembly so as 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 since the driver did not release the key when the engine starts or if the solenoid remains engaged since there is a short. This causes the pinion to spin separately of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is an important step because this particular type of back drive will allow the starter to spin very fast that it could fly apart. Unless modifications were done, the sprag clutch arrangement will stop making use of the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually an average starter motor is intended for intermittent utilization that will stop it being utilized as a generator.

Therefore, the electrical parts are designed to be able to operate for about under 30 seconds in order to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are designed to save weight and cost. This is the reason the majority of owner's guidebooks intended for vehicles suggest the operator to pause for a minimum of 10 seconds after each 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was introduced onto the market during the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This drive system works on a helically cut driveshaft which has a starter drive pinion placed on it. When the starter motor starts turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore 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 instant, 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 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 inside the body of the drive unit. This was much better as the average Bendix drive used in order to disengage from the ring as soon as the engine fired, although it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft as soon as the starter motor is engaged and begins turning. Afterward the starter motor 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 example it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be prevented previous to a successful engine start.