

Forklift Starter and Alternator

Forklift Alternators and Starters - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid mounted on it. As soon as 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 that is located on the driveshaft and meshes the pinion using the starter ring gear which is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. After 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 only one direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion remains engaged, for example as the operator fails to release the key once the engine starts or if the solenoid remains engaged as there is a short. This actually causes the pinion to spin separately of its driveshaft.

The actions mentioned above will stop the engine from driving the starter. This important step stops the starter from spinning very fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement would prevent the use of the starter as a generator if it was used in the hybrid scheme mentioned earlier. Typically an average starter motor is intended for intermittent utilization that would stop it being used as a generator.

Thus, the electrical parts are designed to function for around under thirty seconds to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical components are intended to save weight and cost. This is the reason most owner's guidebooks meant for vehicles suggest the operator to stop for a minimum of 10 seconds right after each ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over right away.

The overrunning-clutch pinion was launched onto the market during the early part of the 1960's. Prior to the 1960's, a Bendix drive was utilized. This particular drive system operates on a helically cut driveshaft which consists of a starter drive pinion placed on it. As soon as the starter motor starts 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 surpass the rotating speed of the starter. At this point, 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 known as the Bendix Folo-Thru drive, made and launched during the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was better since the average Bendix drive utilized in order 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. As soon as the drive unit is spun at a speed higher than what is attained by the starter motor itself, like for example it is backdriven by the running engine, and afterward 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 avoided prior to a successful engine start.