

Forklift Starters and Alternators

Forklift Starters and Alternators - A starter motor today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid mounted on it. Once current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is positioned 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. Once the engine starts, the key operated switch is opened and a spring inside the solenoid assembly pulls 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 allows the pinion to transmit drive in only a single direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance 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 causes the pinion to spin separately of its driveshaft.

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

Hence, the electrical parts are intended to be able to function for just about under thirty seconds to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are designed to save cost and weight. This is actually the reason nearly all owner's manuals used for automobiles recommend the operator to stop for at least ten seconds right after each and every 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over immediately.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows 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.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and introduced in 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 a lot better since the typical Bendix drive utilized to be able to disengage from the ring as soon as the engine fired, although it did not stay functioning.

When 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. 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 after that the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented prior to a successful engine start.