

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor of today is normally either a series-parallel wound direct current electric motor that includes a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. When the engine starts, the key operated switch is opened and a spring in 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 just a single direction. Drive is transmitted in this particular way via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance 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 in view of the fact that there is a short. This causes the pinion to spin independently of its driveshaft.

The actions mentioned above will stop the engine from driving the starter. This important step stops the starter from spinning so fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would prevent making use of the starter as a generator if it was utilized in the hybrid scheme discussed prior. Normally a regular starter motor is designed for intermittent use that will preclude it being used as a generator.

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

The overrunning-clutch pinion was launched onto the market in the early part of the 1960's. Previous to the 1960's, a Bendix drive was used. This drive system functions 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 enables it to ride forward on the helix, therefore 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 thus out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and introduced during the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights inside the body of the drive unit. This was better since the typical Bendix drive utilized to be able to disengage from the ring once 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. Then 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 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, hence unwanted starter disengagement can be avoided previous to a successful engine start.