

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor nowadays is usually either a series-parallel wound direct current electric motor that has a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 seen on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. After 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 action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by an overrunning clutch. This permits the pinion to transmit drive in just a single direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion remains engaged, for instance since the operator fails to release the key as soon as the engine starts or if the solenoid remains engaged since there is a short. This causes the pinion to spin separately of its driveshaft.

The actions mentioned above would prevent the engine from driving the starter. This important step stops the starter from spinning really fast that it can fly apart. Unless modifications were done, the sprag clutch arrangement would prevent using the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Normally an average starter motor is designed for intermittent use which will preclude it being utilized as a generator.

The electrical components are made to be able to operate for approximately thirty seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are designed to save weight and cost. This is truly the reason the majority of owner's manuals used for automobiles suggest the operator to stop for at least 10 seconds after each and every ten or fifteen seconds of cranking the engine, if trying to start an engine which does not turn over instantly.

The overrunning-clutch pinion was launched onto the market in the early part of the 1960's. Before the 1960's, a Bendix drive was utilized. This particular drive system works on a helically cut driveshaft that has a starter drive pinion placed on it. Once the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore 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 moment, 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 during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was better in view of the fact that the average Bendix drive used so as to disengage from the ring once the engine fired, even if it did not stay running.

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 attained by the starter motor itself, for example it is backdriven by the running engine, and then 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 could be prevented previous to a successful engine start.