

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor these days 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, mainly through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is located on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. Once 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 a single direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example for the reason that the operator fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

The actions discussed above would prevent the engine from driving the starter. This vital step stops the starter from spinning very fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude the use of the starter as a generator if it was used in the hybrid scheme mentioned earlier. Usually a standard starter motor is meant for intermittent utilization which would preclude it being utilized as a generator.

Thus, the electrical parts are meant to be able to function for more or less less than thirty seconds so as to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical components are designed to save cost and weight. This is the reason most owner's handbooks utilized for automobiles suggest the driver to pause for at least ten seconds after every 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was launched onto the market in the early 1960's. Before the 1960's, a Bendix drive was used. This drive system operates on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this moment, 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 developed in the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was a lot better for the reason that the average Bendix drive used to be able to disengage from the ring once the engine fired, even though it did not stay running.

The drive unit is forced forward by inertia on the helical shaft once 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 attained 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 enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided before a successful engine start.