Forklift Starter and Alternator

Forklift Starters and Alternators - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. As soon as current from the starting battery is applied to the solenoid, basically through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is situated 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, which begins to turn. After 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 action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by means of an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance because the driver did not release the key once 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 mentioned above would prevent the engine from driving the starter. This significant step prevents the starter from spinning very fast that it can fly apart. Unless adjustments were done, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Typically a standard starter motor is intended for intermittent use which will preclude it being utilized as a generator.

The electrical parts are made in order to work for more or less thirty seconds to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save weight and cost. This is the reason nearly all owner's guidebooks for vehicles recommend the driver to stop for at least ten seconds after each ten or fifteen seconds of cranking the engine, if trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was launched onto the marked in the early 1960's. Prior to the 1960's, a Bendix drive was utilized. This drive system functions on a helically cut driveshaft which consists of a starter drive pinion placed on it. When the starter motor starts spinning, 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 exceed the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was made and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was much better because the typical Bendix drive used to be able to disengage from the ring as soon as the engine fired, though it did not stay functioning.

As soon as 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, 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 permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented before a successful engine start.