Forklift Alternators and Starters

Forklift Alternators and Starters - Today's starter motor is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. Once 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 that is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. When 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 means of an overrunning clutch. This permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion remains engaged, like for instance because the driver did not release the key when the engine starts or if the solenoid remains engaged as 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 vital step prevents the starter from spinning really fast that it will fly apart. Unless modifications were made, the sprag clutch arrangement will prevent making use of the starter as a generator if it was employed in the hybrid scheme discussed earlier. Normally an average starter motor is designed for intermittent utilization that will prevent it being used as a generator.

The electrical components are made to be able to operate for more or less thirty seconds so as to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are designed to save cost and weight. This is actually the reason the majority of owner's manuals utilized for vehicles suggest the driver to stop for at least ten seconds after each ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over at once.

The overrunning-clutch pinion was launched onto the marked during the early part of the 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 turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this moment, 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, developed 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 as the typical Bendix drive used to disengage from the ring when the engine fired, even though it did not stay functioning.

Once the starter motor is engaged and begins 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 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, thus unwanted starter disengagement could be avoided previous to a successful engine start.