Forklift Alternators and Starters

Forklift Starters and Alternators - A starter motors today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. Once 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 positioned on the driveshaft and meshes the pinion with the starter ring gear which is found on the flywheel of the engine.

Once the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch that opens the spring assembly to be able to pull 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 just a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance in view of the fact that the driver 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.

This aforementioned action prevents the engine from driving the starter. This is actually an essential step because this type of back drive will allow the starter to spin so fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement would stop the use of the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Typically a standard starter motor is designed for intermittent use which will preclude it being utilized as a generator.

The electrical components are made so as to work for approximately thirty seconds to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are intended to save weight and cost. This is actually the reason nearly all owner's handbooks intended for vehicles suggest the operator to pause for a minimum of ten seconds after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was launched onto the marked in the early 1960's. Before 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. As soon as the starter motor starts turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to surpass the rotating speed of the starter. At this point, 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 made during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and introduced during the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was a lot better as the typical Bendix drive used so as to disengage from the ring once the engine fired, even 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 achieved by the starter motor itself, for instance it is backdriven by the running engine, and after that 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 before a successful engine start.