Forklift Alternators and Starters

Forklift Alternators and Starters - The starter motor these days is typically either a series-parallel wound direct current electric motor which consists of a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 with 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 particular 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 only a single direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example since the driver did not release the key once the engine starts or if the solenoid remains engaged as there is a short. This actually causes the pinion to spin independently of its driveshaft.

This aforesaid action stops the engine from driving the starter. This is actually an important step because this particular kind of back drive will enable the starter to spin so fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was utilized in the hybrid scheme discussed prior. Usually a regular starter motor is intended for intermittent use which will stop it being utilized as a generator.

Therefore, the electrical parts are meant to be able to operate for approximately less than 30 seconds so as to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are meant to save weight and cost. This is really the reason the majority of owner's manuals meant for vehicles recommend the operator to pause for at least 10 seconds after each 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over right away.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence 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 thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was developed and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was an improvement as the typical Bendix drive utilized in order to disengage from the ring once the engine fired, although it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. Afterward the starter motor becomes latched into the engaged position. Once 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, thus unwanted starter disengagement could be avoided prior to a successful engine start.