Forklift Starter and Alternator

Forklift Alternators and Starters - A starter motors today 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, mainly through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is positioned on the driveshaft and meshes the pinion using the starter ring gear which is found on the engine flywheel.

Once the starter motor begins to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has a key operated switch that opens the spring assembly so as 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 an overrunning clutch. This permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example since the operator 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.

This above mentioned action stops the engine from driving the starter. This is actually an important step for the reason that this type of back drive will enable the starter to spin very fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was employed in the hybrid scheme discussed earlier. Typically a regular starter motor is designed for intermittent use that would prevent it being used as a generator.

The electrical components are made to be able to operate for roughly thirty seconds to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are meant to save weight and cost. This is the reason nearly all owner's handbooks intended for automobiles recommend the operator to pause for at least ten seconds after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over instantly.

During the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was used. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor starts turning, the inertia of the drive pinion assembly enables 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.

The development of Bendix drive was made during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, made and introduced in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights in the body of the drive unit. This was an improvement since the average Bendix drive utilized in order to disengage from the ring when the engine fired, even though it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft when the starter motor is engaged and starts turning. Afterward the starter motor becomes latched into the engaged position. As soon as 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 next 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 prevented before a successful engine start.