Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor nowadays is typically either a series-parallel wound direct current electric motor which has a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 situated on the driveshaft and meshes the pinion using the starter ring gear that is seen on the flywheel of the engine.

As soon as the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch which opens the spring assembly to be able to pull 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 means of an overrunning clutch. This allows the pinion to transmit drive in just one direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for example in view of the fact that the operator fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is an essential step in view of the fact that this type of back drive will enable the starter to spin so fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement would stop using the starter as a generator if it was utilized in the hybrid scheme discussed prior. Typically a regular starter motor is intended for intermittent use which would prevent it being utilized as a generator.

Therefore, the electrical parts are designed to function for more or less less than 30 seconds in order to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are intended to save weight and cost. This is the reason most owner's instruction manuals meant for automobiles suggest the driver to stop for a minimum of ten seconds right after each and every ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was launched onto the marked during the early part of the 1960's. Prior to the 1960's, a Bendix drive was utilized. This particular drive system operates on a helically cut driveshaft which consists of a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond 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 in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was an improvement since the typical Bendix drive utilized so as to disengage from the ring when the engine fired, although it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Then 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, like for example it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided prior to a successful engine start.