Forklift Starter and Alternator

Forklift Starter and Alternator - The starter motor of today is usually either a series-parallel wound direct current electric motor that includes a starter solenoid, which 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, 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 utilizing the starter ring gear that is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. After 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 just one direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example in view of the fact that the operator did not release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is actually an essential step since this particular kind of back drive will allow the starter to spin so fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement would stop utilizing the starter as a generator if it was made use of in the hybrid scheme discussed prior. Normally a standard starter motor is intended for intermittent use which will preclude it being used as a generator.

Therefore, the electrical parts are intended to function for more or less under 30 seconds so as to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are designed to save weight and cost. This is really the reason the majority of owner's manuals used for automobiles suggest the driver to pause for a minimum of 10 seconds right after each ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over right away.

During the early part of the 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. When the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore 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 therefore out of mesh with the ring gear.

The development of Bendix drive was developed in the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was better as the standard Bendix drive used in order to disengage from the ring once the engine fired, even though it did not stay functioning.

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