Forklift Alternators and Starters

Forklift Starters and Alternators - The starter motor of today is normally either a series-parallel wound direct current electric motor which includes 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, mainly via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is situated on the driveshaft and meshes the pinion with the starter ring gear that is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. Once the engine starts, the key operated switch is opened and a spring inside 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 allows the pinion to transmit drive in only one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, for instance because the operator fails to release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

The actions mentioned above will prevent the engine from driving the starter. This important step prevents the starter from spinning very fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement would stop making use of the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Normally a regular starter motor is intended for intermittent use that will stop it being used as a generator.

Hence, the electrical components are intended to be able to work for about under 30 seconds so as to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are meant to save weight and cost. This is really the reason the majority of owner's guidebooks for vehicles recommend the driver to pause for a minimum of ten seconds after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

The overrunning-clutch pinion was introduced 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 works on a helically cut driveshaft that consists of a starter drive pinion placed on it. When the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this moment, 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 developed in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was better because the average Bendix drive used 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. As soon as the drive unit is spun at a speed higher than what is attained by the starter motor itself, for example it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be prevented prior to a successful engine start.