Forklift Alternators and Starters

Forklift Starters and Alternators - A starter motors today is typically 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, basically via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is located on the driveshaft and meshes the pinion with the starter ring gear which is seen on the flywheel of the engine.

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 inside 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 remains engaged, for example since the operator did not release the key as soon as the engine starts or if the solenoid remains engaged as there is a short. This causes the pinion to spin separately of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is an important step as this kind of back drive will allow the starter to spin so fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude using the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Normally a standard starter motor is meant for intermittent utilization that will preclude it being utilized as a generator.

The electrical components are made to be able to function for about 30 seconds in order to avoid overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are meant to save weight and cost. This is really the reason nearly all owner's guidebooks meant for automobiles recommend the operator to stop for at least ten seconds right after each ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was introduced onto the marked during the early part of the 1960's. Before the 1960's, a Bendix drive was utilized. This drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. As soon as the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear allows the pinion to surpass the rotating speed of the starter. At this point, 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 during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and introduced during the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights inside the body of the drive unit. This was an improvement since the standard Bendix drive used in order to disengage from the ring once the engine fired, even if it did not stay running.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Afterward the starter motor becomes latched into the engaged position. When the drive unit is spun at a speed higher than what is attained 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 allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be prevented previous to a successful engine start.