Starters for Forklift

Forklift Starters - The starter motor of today is usually either a series-parallel wound direct current electric motor which includes a starter solenoid, which is similar to a relay mounted on it, or it could 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 that pushes out the drive pinion which is located on the driveshaft and meshes the pinion with the starter ring gear that is seen on the flywheel of the engine.

When the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch which opens the spring assembly to be able 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 just a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion remains engaged, like for instance in view of the fact that the operator did not release the key as soon as the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This actually causes the pinion to spin separately of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an essential step because this type of back drive will allow the starter to spin so fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement would stop using the starter as a generator if it was employed in the hybrid scheme discussed prior. Normally a standard starter motor is meant for intermittent use that will preclude it being used as a generator.

Therefore, the electrical components are intended to work for approximately under 30 seconds to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are designed to save cost and weight. This is truly the reason nearly all owner's instruction manuals meant for automobiles recommend the driver to stop for at least 10 seconds after each 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was launched onto the marked in the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft which has a starter drive pinion placed on it. Once the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear allows the pinion to surpass the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that was developed and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was better in view of the fact that the typical Bendix drive used to be able to disengage from the ring as soon as 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 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 attained by the starter motor itself, like for instance it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be prevented previous to a successful engine start.