Starters for Forklifts

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

When the starter motor begins to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid has a key operated switch that 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 permits the pinion to transmit drive in just one direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example as the operator did not release the key once 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.

The actions discussed above would prevent the engine from driving the starter. This important step stops the starter from spinning so fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will stop using the starter as a generator if it was utilized in the hybrid scheme discussed prior. Normally an average starter motor is meant for intermittent utilization which would stop it being used as a generator.

The electrical components are made so as to operate for roughly 30 seconds in order to prevent 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 actually the reason most owner's instruction manuals utilized for automobiles suggest the driver to stop for a minimum of ten seconds right after each 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over right away.

The overrunning-clutch pinion was launched onto the marked in the early 1960's. Previous to the 1960's, a Bendix drive was used. This drive system works 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 enables it to ride forward on the helix, therefore engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to exceed 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.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was much better since the standard Bendix drive used so as to disengage from the ring once the engine fired, even though it did not stay running.

Once the starter motor is engaged and begins turning, the drive unit is forced forward on the helical shaft by inertia. It then becomes latched into the engaged position. When 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 afterward the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided prior to a successful engine start.