Starters for Forklifts

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

Once the starter motor starts 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 in order 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 an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example for the reason that the operator did not release the key as soon as the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin independently of its driveshaft.

This aforementioned 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 made, the sprag clutch arrangement will stop the use of the starter as a generator if it was used in the hybrid scheme discussed earlier. Normally a standard starter motor is intended for intermittent utilization which will preclude it being used as a generator.

The electrical parts are made in order to operate for more or less 30 seconds so as to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are meant to save cost and weight. This is actually the reason the majority of owner's guidebooks meant for vehicles recommend the driver to pause for at least 10 seconds after each ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over right away.

The overrunning-clutch pinion was introduced onto the marked in the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This drive system works on a helically cut driveshaft that consists of a starter drive pinion placed on it. When 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. When the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was made and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was an enhancement for the reason that the standard Bendix drive utilized to be able to disengage from the ring as soon as the engine fired, although it did not stay running.

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. When the drive unit is spun at a speed higher than what is attained 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 permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be avoided before a successful engine start.