Starter for Forklifts

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

The solenoid closes the high-current contacts for the starter motor, which begins to turn. After the engine starts, the key operated switch is opened and a spring in 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 an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance since the operator did not release the key as soon as the engine starts or if the solenoid remains engaged for the reason that there is a short. This actually causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an important step in view of the fact that this kind of back drive would allow the starter to spin so fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement would stop using the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Usually a standard starter motor is intended for intermittent use which would prevent it being utilized as a generator.

Hence, the electrical parts are meant to be able to function for about under thirty seconds to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are intended to save weight and cost. This is the reason the majority of owner's manuals utilized for automobiles recommend the operator to stop for a minimum of 10 seconds after each and every ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was introduced onto the marked in the early part of the 1960's. Previous to the 1960's, a Bendix drive was utilized. This particular drive system functions on a helically cut driveshaft which consists of 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, thus engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed 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 in the body of the drive unit. This was better as the typical Bendix drive utilized to disengage from the ring once the engine fired, even though it did not stay running.

When 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. Once 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 after that 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 could be prevented previous to a successful engine start.