Starters for Forklifts

Forklift Starters - The starter motor nowadays is usually either a series-parallel wound direct current electric motor that consists of a starter solenoid, which is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 utilizing the starter ring gear that is found on the flywheel of the engine.

Once the starter motor starts to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has a key operated switch which opens the spring assembly so as 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 one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance because the driver fails to 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 separately of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is an important step since this particular type of back drive would allow the starter to spin really fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement will preclude the use of the starter as a generator if it was employed in the hybrid scheme discussed prior. Typically a standard starter motor is meant for intermittent utilization which will prevent it being utilized as a generator.

Hence, the electrical components are meant to be able to operate for approximately less than thirty seconds to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are meant to save cost and weight. This is the reason most owner's manuals meant for vehicles recommend the driver to pause for at least 10 seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over immediately.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. 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. 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.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed and launched during 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 much better for the reason that the typical Bendix drive utilized in order to disengage from the ring when the engine fired, even if it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft when the starter motor is engaged and starts turning. After that the starter motor becomes latched into the engaged position. Once the drive unit is spun at a speed higher than what is achieved by the starter motor itself, for instance it is backdriven by the running engine, and afterward 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 could be avoided before a successful engine start.