Starter for Forklifts

Forklift Starters - A starter motors today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid installed on it. 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 situated on the driveshaft and meshes the pinion using 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. As soon as the engine has started, the solenoid consists of a key operated switch which opens the spring assembly 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 means of an overrunning clutch. This allows the pinion to transmit drive in just one direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion remains engaged, for instance for the reason that the driver fails to release the key when 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 stops the engine from driving the starter. This is actually an important step because this particular kind of back drive would allow the starter to spin very fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement will stop making use of the starter as a generator if it was used in the hybrid scheme discussed earlier. Typically an average starter motor is designed for intermittent use that will preclude it being utilized as a generator.

Hence, the electrical parts are intended to be able to function for approximately under thirty seconds to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical components are designed to save cost and weight. This is truly the reason nearly all owner's instruction manuals intended for vehicles recommend the driver to pause for at least ten seconds after every 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over immediately.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was used. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

The development of Bendix drive was developed in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights in the body of the drive unit. This was an enhancement as the typical Bendix drive used to disengage from the ring once the engine fired, even though it did not stay functioning.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Afterward the starter motor 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, like 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 permits the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided before a successful engine start.