Forklift Starters

Forklift Starters - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid mounted on it. When current from the starting battery is applied to the solenoid, mainly 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 with the starter ring gear that is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. After the engine starts, the key operated switch is opened and a spring within the solenoid assembly pulls 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 allows the pinion to transmit drive in just a single direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance because the operator fails to release the key as soon as 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 aforesaid action prevents the engine from driving the starter. This is an essential step since this particular type of back drive will allow the starter to spin so fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement would stop the use of the starter as a generator if it was made use of in the hybrid scheme discussed earlier. Usually an average starter motor is designed for intermittent utilization that will stop it being used as a generator.

Thus, the electrical parts are designed to be able to operate for around less than 30 seconds to be able to avoid overheating. The overheating results from too 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 for automobiles suggest the driver to pause for at least ten seconds after each ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was launched onto the marked in the early 1960's. Prior to the 1960's, a Bendix drive was utilized. This drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. When 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. When the engine starts, the backdrive caused from the ring gear enables 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 thus out of mesh with the ring gear.

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was better in view of the fact that the typical Bendix drive utilized so as to disengage from the ring once the engine fired, although it did not stay running.

As soon as 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 instance it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided before a successful engine start.