Forklift Starters

Forklift Starters - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid mounted on it. As soon as current from the starting battery is applied to the solenoid, basically through 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 found on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. Once 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 particular 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 only one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, for instance for the reason that the driver did not release the key when the engine starts or if the solenoid remains engaged since there is a short. This causes the pinion to spin separately of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is actually an essential step because this particular kind of back drive will allow the starter to spin really fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would stop utilizing the starter as a generator if it was employed in the hybrid scheme discussed earlier. Usually an average starter motor is meant for intermittent utilization which would preclude it being utilized as a generator.

Hence, the electrical parts are designed to be able to function for about under 30 seconds to be able to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are designed to save weight and cost. This is the reason the majority of owner's handbooks meant for automobiles suggest the driver to stop for at least 10 seconds after each ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was introduced onto the marked during the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This drive system operates on a helically cut driveshaft which has a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. Once 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 hence out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design that was developed and introduced in the 1960s was the Bendix Folo-Thru drive. 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 used to disengage from the ring as soon as the engine fired, 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. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like 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, hence unwanted starter disengagement could be prevented prior to a successful engine start.