Starter for Forklifts

Forklift Starters - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. 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 that is positioned on the driveshaft and meshes the pinion utilizing 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. Once 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 an overrunning clutch. This permits the pinion to transmit drive in just one direction. Drive is transmitted in this particular method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example in view of the fact that the operator did not release the key when the engine starts or if the solenoid remains engaged because there is a short. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above will prevent the engine from driving the starter. This significant step prevents the starter from spinning very fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent making use of the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Usually an average starter motor is meant for intermittent use which would preclude it being used as a generator.

Therefore, the electrical components are meant to operate for more or less less than 30 seconds so as to avoid overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical parts are meant to save weight and cost. This is the reason nearly all owner's manuals for automobiles suggest the operator to pause for at least 10 seconds right after each 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over right away.

In the early 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. When the starter motor starts spinning, the inertia of the drive pinion assembly enables 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 exceed 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.

During the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design that was made and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was an enhancement since the average Bendix drive used to be able to disengage from the ring once the engine fired, though it did not stay running.

Once 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. When 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 next 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 could be avoided previous to a successful engine start.