Starter for Forklifts

Starter for Forklifts - The starter motor of today is typically either a series-parallel wound direct current electric motor which includes a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. 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 which is situated on the driveshaft and meshes the pinion with the starter ring gear which is found on the flywheel of the engine.

When the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch that opens the spring assembly in order 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 allows the pinion to transmit drive in only one direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion remains engaged, for example as the driver 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 independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an important step for the reason that this kind of back drive would enable the starter to spin so fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement will preclude making use of the starter as a generator if it was employed in the hybrid scheme mentioned prior. Typically a standard starter motor is intended for intermittent utilization that would stop it being utilized as a generator.

Therefore, the electrical components are intended to operate for roughly under 30 seconds to be able to avoid 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 truly the reason most owner's instruction manuals for vehicles recommend the operator to stop for at least 10 seconds after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over at once.

The overrunning-clutch pinion was introduced onto the marked during the early 1960's. Previous to the 1960's, a Bendix drive was used. This drive system functions on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as the starter motor begins turning, the inertia of the drive pinion assembly enables 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 surpass 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 in the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was an improvement in view of the fact that the standard Bendix drive utilized in order to disengage from the ring when 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 example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be prevented before a successful engine start.