

Starter for Forklifts

Starter for Forklifts - A starter motor today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. When 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 located on the driveshaft and meshes the pinion with the starter ring gear that is seen on the flywheel of the engine.

As soon as the starter motor starts to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has a key operated switch which 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 means of an overrunning clutch. This allows the pinion to transmit drive in just a single direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion continues to be engaged, like for example since the operator fails to release the key once the engine starts or if the solenoid remains engaged since there is a short. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above will stop the engine from driving the starter. This important step prevents the starter from spinning very fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent using the starter as a generator if it was employed in the hybrid scheme mentioned prior. Typically an average starter motor is meant for intermittent utilization that would preclude it being utilized as a generator.

Thus, the electrical components are designed to operate for just about under 30 seconds to be able to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are intended to save cost and weight. This is actually the reason most owner's guidebooks used for vehicles recommend the driver to stop for a minimum of 10 seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over instantly.

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

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, made and introduced in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights within the body of the drive unit. This was better in view of the fact that the average Bendix drive used to be able to disengage from the ring when the engine fired, even though it did not stay functioning.

When the starter motor is engaged and starts 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 afterward the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be prevented prior to a successful engine start.