

Starters for Forklift

Forklift Starters - The starter motor of today is typically either a series-parallel wound direct current electric motor that has a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is positioned on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the flywheel of the engine.

When the starter motor starts 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 to be able to pull 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 only a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion remains engaged, for example because the driver fails to release the key when 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 aforementioned action stops the engine from driving the starter. This is an important step as this particular type of back drive would allow the starter to spin really fast that it will fly apart. Unless modifications were made, the sprag clutch arrangement will prevent using the starter as a generator if it was used in the hybrid scheme discussed prior. Usually a standard starter motor is intended for intermittent use which would prevent it being utilized as a generator.

Hence, the electrical parts are designed to be able to operate for more or less under 30 seconds so as to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are designed to save weight and cost. This is actually the reason nearly all owner's guidebooks intended for automobiles recommend the operator to pause for at least 10 seconds after every 10 or 15 seconds of cranking the engine, whenever trying to start an engine which does not turn over at once.

The overrunning-clutch pinion was launched onto the market in the early part of the 1960's. Previous to the 1960's, a Bendix drive was used. This drive system works on a helically cut driveshaft which has a starter drive pinion placed on it. 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. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this instant, 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 which was made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was a lot better because the average Bendix drive used to be able to disengage from the ring when the engine fired, though it did not stay running.

The drive unit is forced forward by inertia on the helical shaft when the starter motor is engaged and starts turning. Afterward the starter motor 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 permits the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement could be prevented previous to a successful engine start.