

Starters for Forklifts

Forklift Starters - The starter motor of today is usually 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 can be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, basically via 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 using the starter ring gear that is found 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 that opens the spring assembly so as 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 only one direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example as the operator fails to release the key once 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 since this type of back drive will enable the starter to spin very fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was employed in the hybrid scheme discussed earlier. Normally a standard starter motor is designed for intermittent utilization which will prevent it being utilized as a generator.

Therefore, the electrical parts are meant to be able to function for just about less than 30 seconds in order to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are meant to save cost and weight. This is actually the reason most owner's instruction manuals intended for vehicles suggest the driver to stop for at least ten seconds after each 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that 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 inside the body of the drive unit. This was an enhancement for the reason that the typical Bendix drive used to be able to disengage from the ring as soon as the engine fired, though it did not stay functioning.

The drive unit is force forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. Then the starter motor becomes latched into the engaged position. As soon as the drive unit is spun at a speed higher than what is attained by the starter motor itself, for example it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement could be prevented previous to a successful engine start.