

Starters for Forklifts

Forklift Starters - The starter motor nowadays is usually either a series-parallel wound direct current electric motor which includes a starter solenoid, that 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 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 using the starter ring gear which is found on the flywheel of the engine.

As soon as the starter motor begins to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid consists of a key operated switch that opens the spring assembly 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 an overrunning clutch. This allows 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 remains engaged, like for instance as the operator did not release the key once the engine starts or if the solenoid remains engaged because there is a short. This actually causes the pinion to spin separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is actually an important step as this kind of back drive will enable the starter to spin very fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement will stop making use of the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Normally a regular starter motor is designed for intermittent use that would stop it being used as a generator.

Thus, the electrical parts are designed to operate for about under 30 seconds 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 the reason the majority of owner's instruction manuals meant for automobiles recommend the operator to pause for at least 10 seconds after every ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over at once.

In the early 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. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly enables 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 hence out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, developed and introduced during 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 much better because the average Bendix drive utilized to disengage from the ring as soon as 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 begins turning. After that the starter motor becomes latched into the engaged position. When the drive unit is spun at a speed higher than what is attained by the starter motor itself, like 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 enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided before a successful engine start.