

Starter for Forklifts

Forklift Starter - The starter motor nowadays 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 can be a permanent-magnet composition. As soon as current from the starting battery is applied to the solenoid, mainly via 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 utilizing the starter ring gear that is found on the flywheel of the engine.

Once the starter motor begins to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid has a key operated switch which opens the spring assembly 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 permits the pinion to transmit drive in only one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, for instance in view of the fact that the driver did not release the key as soon as the engine starts or if the solenoid remains engaged as there is a short. This actually causes the pinion to spin independently of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is an important step for the reason that this particular kind of back drive will allow the starter to spin very fast that it could fly apart. Unless modifications were done, the sprag clutch arrangement would stop utilizing the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Typically a regular starter motor is designed for intermittent utilization which would prevent it being used as a generator.

Thus, the electrical parts are meant to be able to function for more or less under 30 seconds so as 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 manuals intended for automobiles suggest the driver to pause for a minimum of ten seconds right after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over instantly.

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 works by placing the starter drive pinion on a helically cut driveshaft. When the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore engaging with the ring gear. Once 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 thus out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and launched during the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was better in view of the fact that the typical Bendix drive used in order to disengage from the ring once the engine fired, although it did not stay running.

The drive unit is forced forward by inertia on the helical shaft once the starter motor is engaged and begins turning. After that the starter motor becomes latched into the engaged position. As soon as 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 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, therefore unwanted starter disengagement could be avoided previous to a successful engine start.