

Starters for Forklift

Forklift Starters - Today's starter motor is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid mounted on it. Once 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 located on the driveshaft and meshes the pinion with the starter ring gear which is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which begins to turn. Once the engine starts, the key operated switch is opened and a spring inside the solenoid assembly pulls 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 particular method through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example because the driver did not release the key when the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This actually causes the pinion to spin independently of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is an important step because this type of back drive would enable the starter to spin really fast that it would fly apart. Unless modifications were done, the sprag clutch arrangement will prevent utilizing the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Normally an average starter motor is intended for intermittent utilization that would prevent it being utilized as a generator.

Hence, the electrical components are meant to function for around under thirty seconds to be able to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are designed to save cost and weight. This is actually the reason most owner's manuals meant for automobiles recommend the driver to pause for at least ten seconds after each ten or fifteen seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was introduced onto the market in the early 1960's. Before the 1960's, a Bendix drive was utilized. This drive system functions on a helically cut driveshaft that consists of a starter drive pinion placed on it. 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. When 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 therefore out of mesh with the ring gear.

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and introduced during the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was better because the average Bendix drive utilized to be able to disengage from the ring once the engine fired, even if it did not stay running.

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. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for instance 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, hence unwanted starter disengagement could be avoided prior to a successful engine start.