

Starter for Forklift

Forklift Starter - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed 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 situated on the driveshaft and meshes the pinion with the starter ring gear that is found on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, which begins to turn. When the engine starts, the key operated switch is opened and a spring within the solenoid assembly pulls 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 a single direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, for example as the operator did not release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

The actions discussed above would stop the engine from driving the starter. This significant step stops the starter from spinning really fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent the use of the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Typically a regular starter motor is meant for intermittent utilization which would prevent it being used as a generator.

Hence, the electrical parts are meant to operate for around less than 30 seconds to be able to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are intended to save cost and weight. This is actually the reason most owner's instruction manuals meant for vehicles suggest the operator to pause for at least 10 seconds after each ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was launched onto the market in the early 1960's. Before the 1960's, a Bendix drive was utilized. This particular drive system operates 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, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear allows 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.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design that was made and launched in 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 better as the standard Bendix drive used so as to disengage from the ring when the engine fired, although it did not stay running.

The drive unit is forced 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. When 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 then 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 prior to a successful engine start.