

Forklift Starters

Starters for Forklift - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. Once 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 that is positioned on the driveshaft and meshes the pinion with the starter ring gear that is seen on the engine flywheel.

As soon as the starter motor starts to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid has a key operated switch that opens the spring assembly in order 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 means of an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion remains engaged, for example because the operator fails to release the key once 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 prevent the engine from driving the starter. This important step stops the starter from spinning so fast that it can fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude utilizing the starter as a generator if it was made use of in the hybrid scheme discussed prior. Normally a standard starter motor is designed for intermittent utilization which will preclude it being used as a generator.

Therefore, the electrical components are intended to function for roughly less than thirty seconds so as to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are meant to save weight and cost. This is actually the reason most owner's manuals for vehicles recommend the driver to stop for at least ten seconds after each and every ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over right away.

During the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was used. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this moment, 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 in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights inside the body of the drive unit. This was an improvement since the standard Bendix drive utilized so as to disengage from the ring when the engine fired, though it did not stay functioning.

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. Once 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 afterward 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 previous to a successful engine start.