

## Starter for Forklifts

Starters for Forklift - The starter motor nowadays is typically either a series-parallel wound direct current electric motor which has a starter solenoid, which is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 which is located on the driveshaft and meshes the pinion using the starter ring gear which is seen on the engine flywheel.

When the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch that 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 allows the pinion to transmit drive in just a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion remains engaged, like for example as the operator 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 separately of its driveshaft.

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

Hence, the electrical components are designed to be able to operate for roughly under 30 seconds to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are intended to save weight and cost. This is the reason most owner's manuals utilized for vehicles recommend the operator to stop for a minimum of 10 seconds after every ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was introduced onto the market during the early part of the 1960's. Before the 1960's, a Bendix drive was utilized. This particular drive system works on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as the starter motor starts turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond 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 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 much better for the reason that the typical Bendix drive used to be able to disengage from the ring when the engine fired, although it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft once the starter motor is engaged and starts turning. Next the starter motor becomes latched into the engaged position. As soon as 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 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, thus unwanted starter disengagement could be avoided before a successful engine start.