

## Starter for Forklifts

Forklift Starters - The starter motor nowadays is usually either a series-parallel wound direct current electric motor that has 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, basically through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion which is located on the driveshaft and meshes the pinion using the starter ring gear that is found on the flywheel of the engine.

When the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch that opens the spring assembly to be able 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 an overrunning clutch. This permits the pinion to transmit drive in just a single direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example because the driver fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

The actions discussed above would stop the engine from driving the starter. This important step prevents the starter from spinning very fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement will stop making use of the starter as a generator if it was utilized in the hybrid scheme discussed prior. Usually a regular starter motor is intended for intermittent use that will prevent it being used as a generator.

Therefore, the electrical components are designed to be able to work for about under 30 seconds so as to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are designed to save weight and cost. This is the reason nearly all owner's instruction manuals utilized for vehicles recommend the operator to pause for a minimum of 10 seconds after each ten or fifteen seconds of cranking the engine, whenever 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. Previous to that time, a Bendix drive was used. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor begins turning, 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 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 during the 1930's with the overrunning-clutch design referred to as 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 inside the body of the drive unit. This was an improvement in view of the fact that the standard Bendix drive used in order to disengage from the ring when the engine fired, even though it did not stay functioning.

As soon as the starter motor is engaged and begins turning, the drive unit is forced forward on the helical shaft by inertia. It then becomes latched into the engaged position. Once 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 then the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented before a successful engine start.