

Forklift Starters

The starter motor these days is normally either a series-parallel wound direct current electric motor which has a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. As soon as 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 utilizing the starter ring gear which is found on the engine flywheel.

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 which opens the spring assembly in order 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 allows the pinion to transmit drive in only one direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example in view of the fact that the driver fails to release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is an essential step in view of the fact that this particular type of back drive will enable the starter to spin so fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement would prevent using the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Typically an average starter motor is intended for intermittent utilization which will preclude it being utilized as a generator.

The electrical parts are made in order to operate for more or less thirty seconds in order to prevent overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are meant to save cost and weight. This is the reason the majority of owner's guidebooks for automobiles recommend the operator to pause for a minimum of 10 seconds after each ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over right away.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. When the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was made and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was better in view of the fact that the standard Bendix drive used to be able to disengage from the ring when the engine fired, even though it did not stay functioning.

The drive unit is force forward by inertia on the helical shaft as soon as the starter motor is engaged and begins turning. Then the starter motor 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 enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be prevented prior to a successful engine start.