

Forklift Starters

Starter for Forklifts - The starter motor these days is typically either a series-parallel wound direct current electric motor that consists of a starter solenoid, which is similar to a relay mounted on it, or it could 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 that is located on the driveshaft and meshes the pinion with the starter ring gear which is seen on the engine flywheel.

When 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 which opens the spring assembly so as 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 only one direction. Drive is transmitted in this method through 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 the solenoid remains engaged for the reason that there is a short. This causes the pinion to spin independently of its driveshaft.

The actions discussed above will stop the engine from driving the starter. This vital step prevents the starter from spinning so fast that it would fly apart. Unless adjustments were done, the sprag clutch arrangement will preclude using the starter as a generator if it was employed in the hybrid scheme discussed prior. Normally an average starter motor is intended for intermittent use which will stop it being utilized as a generator.

The electrical components are made so as to operate for about 30 seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save weight and cost. This is really the reason nearly all owner's instruction manuals intended for vehicles recommend the operator to pause for a minimum of ten seconds right after every ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over at once.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. Once 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 hence out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that was developed and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights inside the body of the drive unit. This was better since the average Bendix drive utilized in order to disengage from the ring as soon as the engine fired, although it did not stay running.

When the starter motor is engaged and starts turning, the drive unit is forced forward on the helical shaft by inertia. It then 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, for instance it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided before a successful engine start.