

Forklift Starters

A starter motor today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid mounted on it. When current from the starting battery is applied to the solenoid, mainly 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 utilizing the starter ring gear which is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which begins to turn. Once the engine starts, the key operated switch is opened and a spring within the solenoid assembly pulls 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 particular way via the pinion to the flywheel ring gear. The pinion remains engaged, like for example because the driver 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 separately of its driveshaft.

The actions discussed above would prevent the engine from driving the starter. This important step prevents the starter from spinning really fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement will prevent making use of the starter as a generator if it was employed in the hybrid scheme mentioned prior. Normally a regular starter motor is intended for intermittent utilization that will prevent it being used as a generator.

The electrical components are made to work for approximately 30 seconds so as to stop 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 nearly all owner's manuals intended for vehicles suggest the operator to pause for at least 10 seconds right 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 launched onto the market in the early part of the 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft which consists of a starter drive pinion placed on it. When the starter motor begins turning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. When 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 thus 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 during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was much better in view of the fact that the standard Bendix drive used so as to disengage from the ring as soon as the engine fired, even if it did not stay functioning.

When 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. As soon as the drive unit is spun at a speed higher than what is achieved 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 permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be prevented previous to a successful engine start.