

Starters for Forklifts

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 installed on it. Once current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is situated on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the flywheel of the engine.

When the starter motor begins to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid consists of a key operated switch that 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 means of an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continues to be engaged, for example for the reason that the driver did not release the key once the engine starts or if the solenoid remains engaged as there is a short. 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 since this type of back drive would allow the starter to spin very fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement would prevent using the starter as a generator if it was used in the hybrid scheme mentioned prior. Normally an average starter motor is designed for intermittent utilization that would prevent it being used as a generator.

The electrical parts are made to be able to work for about thirty seconds in order to prevent overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical parts are intended to save cost and weight. This is really the reason the majority of owner's manuals utilized for automobiles suggest the driver to stop for a minimum of 10 seconds after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over right away.

The overrunning-clutch pinion was launched onto the market in the early 1960's. Before the 1960's, a Bendix drive was utilized. This particular drive system operates on a helically cut driveshaft that consists of a starter drive pinion placed on it. As soon as the starter motor begins 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 allows the pinion to surpass the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was developed. The overrunning-clutch design which was developed and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was an enhancement in view of the fact that the average Bendix drive used in order to disengage from the ring once the engine fired, even though 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. When 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 afterward the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be prevented before a successful engine start.