

Starters for Forklifts

Forklift Starters - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. When current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is located on the driveshaft and meshes the pinion utilizing the starter ring gear that is found on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that starts 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 a single direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion continues to be engaged, for instance as the operator did not release the key when the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin independently of its driveshaft.

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

The electrical parts are made to work for approximately thirty seconds to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical parts are designed to save cost and weight. This is the reason the majority of owner's guidebooks used for vehicles recommend the operator to pause for at least ten seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over right away.

The overrunning-clutch pinion was introduced onto the market in the early 1960's. Before the 1960's, a Bendix drive was used. This drive system operates on a helically cut driveshaft which has 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, hence engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was better for the reason that the typical Bendix drive used so as to disengage from the ring when 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 attained by the starter motor itself, for example it is backdriven by the running engine, and after that 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 avoided before a successful engine start.