

Starter for Forklifts

Forklift Starters - Today's starter motor is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid mounted on it. Once current from the starting battery is applied to the solenoid, mainly via 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 seen on the flywheel of the engine.

As soon as the starter motor starts 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 an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion remains engaged, like for example because the operator fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin separately of its driveshaft.

The actions mentioned above would prevent the engine from driving the starter. This important step stops the starter from spinning so fast that it would fly apart. Unless modifications were made, the sprag clutch arrangement will preclude making use of the starter as a generator if it was utilized in the hybrid scheme discussed prior. Usually a standard starter motor is intended for intermittent utilization which would stop it being used as a generator.

Hence, the electrical parts are meant to be able to operate for about under thirty seconds to prevent overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are intended to save cost and weight. This is truly the reason most owner's instruction manuals 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 instantly.

The overrunning-clutch pinion was introduced onto the market during the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This particular drive system operates on a helically cut driveshaft that consists of a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, hence engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows the pinion to exceed the rotating speed of the starter. At this point, 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 developed. The overrunning-clutch design that was developed and introduced during 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 a lot better because the standard Bendix drive utilized to be able to disengage from the ring once the engine fired, though it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. Then the starter motor becomes latched into the engaged position. When the drive unit is spun at a speed higher than what is attained by the starter motor itself, like for instance it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be avoided before a successful engine start.