

Starters for Forklifts

Forklift Starters - The starter motor of today is typically either a series-parallel wound direct current electric motor which consists of a starter solenoid, that is similar to a relay mounted on it, or it could be a permanent-magnet composition. 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 positioned on the driveshaft and meshes the pinion using the starter ring gear which is found on the engine flywheel.

When the starter motor starts to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch that opens the spring assembly to be able to pull 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 permits the pinion to transmit drive in just one direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion remains engaged, like for example because the driver fails to release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above will stop the engine from driving the starter. This vital step prevents the starter from spinning really fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement will preclude using the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Usually an average starter motor is intended for intermittent utilization that would stop it being utilized as a generator.

The electrical parts are made so as to operate for about 30 seconds in order to prevent overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are designed to save weight and cost. This is the reason nearly all owner's manuals meant for automobiles suggest the driver to stop for at least ten seconds right after each and every ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over immediately.

The overrunning-clutch pinion was introduced onto the market in the early part of the 1960's. Before the 1960's, a Bendix drive was used. This drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. When the starter motor starts turning, the inertia of the drive pinion assembly allows 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 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.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that 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 better as the standard Bendix drive used in order to disengage from the ring once the engine fired, even if 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 begins 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, for instance it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement could be avoided previous to a successful engine start.