

Starters for Forklifts

Starter for Forklifts - The starter motor nowadays is typically either a series-parallel wound direct current electric motor which includes a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, basically through 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 that is found on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. When the engine starts, the key operated switch is opened and a spring inside 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 an overrunning clutch. This permits the pinion to transmit drive in just a single direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion remains engaged, for instance since the driver fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

This aforesaid action stops the engine from driving the starter. This is actually an important step as this kind of back drive will allow the starter to spin very fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement would prevent using the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Usually an average starter motor is designed for intermittent use that would preclude it being used as a generator.

Hence, the electrical parts are intended to function for approximately less than 30 seconds to prevent overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical components are intended to save weight and cost. This is the reason nearly all owner's manuals intended for automobiles recommend the driver to pause for at least 10 seconds after every 10 or 15 seconds of cranking the engine, when trying to start an engine which does not turn over at once.

The overrunning-clutch pinion was introduced onto the market during the early 1960's. Prior to the 1960's, a Bendix drive was used. This particular drive system functions on a helically cut driveshaft which has a starter drive pinion placed on it. As soon as 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. Once the engine starts, the backdrive caused from the ring gear allows the pinion to surpass the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore out of mesh with the ring gear.

The development of Bendix drive was developed in the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, developed and launched during the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was a lot better in view of the fact that the average Bendix drive used to disengage from the ring once the engine fired, although it did not stay functioning.

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. 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 enables the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be avoided previous to a successful engine start.