

Starters for Forklifts

Forklift Starters - The starter motor nowadays is usually 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 can be a permanent-magnet composition. Once current from the starting battery is applied to the solenoid, mainly via a key-operated switch, the solenoid engages a lever that 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 engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which starts to turn. When the engine starts, the key operated switch is opened and a spring in 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 just one direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example as the operator did not release the key when the engine starts or if the solenoid remains engaged for the reason that there is a short. This causes the pinion to spin independently of its driveshaft.

This aforementioned action stops the engine from driving the starter. This is actually an essential step because this type of back drive would enable the starter to spin so fast that it can fly apart. Unless adjustments were done, the sprag clutch arrangement would prevent the use of the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Normally a regular starter motor is meant for intermittent use which will prevent it being utilized as a generator.

Therefore, the electrical components are meant to be able to operate for just about less than thirty seconds so as to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are designed to save cost and weight. This is truly the reason the majority of owner's guidebooks utilized for automobiles suggest the driver to pause for a minimum of ten seconds after every 10 or 15 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 during the early part of the 1960's. Before the 1960's, a Bendix drive was utilized. This drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, therefore engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this instant, 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 made during the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and introduced in 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 better since the standard Bendix drive utilized in order to disengage from the ring as soon as the engine fired, even if it did not stay running.

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. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, for example it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement could be prevented before a successful engine start.