

Starters for Forklifts

Forklift Starters - The starter motor of today is usually either a series-parallel wound direct current electric motor which has a starter solenoid, which 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 which pushes out the drive pinion that is located on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the flywheel of the engine.

Once the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid consists of a key operated switch that opens the spring assembly so as 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 allows the pinion to transmit drive in just a single direction. Drive is transmitted in this particular manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for example as the driver did not release the key once 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 discussed above would stop the engine from driving the starter. This vital step stops the starter from spinning so fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was made use of in the hybrid scheme discussed prior. Usually an average starter motor is meant for intermittent utilization that would stop it being used as a generator.

Therefore, the electrical components are meant to operate for roughly less than 30 seconds so as to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are designed to save weight and cost. This is the reason the majority of owner's handbooks meant for automobiles recommend the operator to pause for a minimum of ten seconds after each and every ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over at once.

During the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was used. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor begins turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. When 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 therefore 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 launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was an enhancement since the average Bendix drive used to disengage from the ring as soon as the engine fired, though it did not stay functioning.

As soon as the starter motor is engaged and begins 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 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 permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement can be avoided prior to a successful engine start.