

Starters for Forklifts

Forklift Starters - A starter motor today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid installed on it. When current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is located on the driveshaft and meshes the pinion using the starter ring gear that is found on the flywheel of the engine.

When the starter motor starts to turn, the solenoid closes the high-current contacts. When the engine has started, the solenoid has a key operated switch that opens the spring assembly so as 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 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 continues to be engaged, like for instance in view of the fact that the driver fails to release the key when the engine starts or if the solenoid remains engaged as there is a short. This actually causes the pinion to spin independently of its driveshaft.

The actions mentioned above would prevent the engine from driving the starter. This significant step prevents the starter from spinning really fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement would prevent the use of the starter as a generator if it was employed in the hybrid scheme discussed earlier. Normally a regular starter motor is meant for intermittent utilization which will preclude it being used as a generator.

Hence, the electrical components are meant to be able to function for about less than thirty seconds to avoid overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical components are designed to save weight and cost. This is actually the reason most owner's instruction manuals meant for automobiles suggest the operator to pause for a minimum of ten seconds after every 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was launched onto the market during the early 1960's. Previous to the 1960's, a Bendix drive was utilized. This particular drive system functions on a helically cut driveshaft which has a starter drive pinion placed on it. Once the starter motor begins turning, the inertia of the drive pinion assembly allows 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 exceed 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 during the 1930's with the overrunning-clutch design referred to as the Bendix Folo-Thru drive, made and introduced during the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was better since the standard Bendix drive utilized to be able to disengage from the ring as soon as the engine fired, although it did not stay running.

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, like 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, thus unwanted starter disengagement can be avoided prior to a successful engine start.