

Forklift Starters

Forklift Starters - The starter motor of today is usually either a series-parallel wound direct current electric motor that consists of a starter solenoid, which 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, mainly through 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 using the starter ring gear that is seen on the flywheel of the engine.

Once the starter motor begins to turn, the solenoid closes the high-current contacts. As soon as the engine has started, the solenoid has a key operated switch which 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 an overrunning clutch. This permits the pinion to transmit drive in only one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, for example in view of the fact that the driver did not 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.

This aforesaid action stops the engine from driving the starter. This is an important step since this kind of back drive will enable the starter to spin very fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would preclude utilizing the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Typically a standard starter motor is intended for intermittent use that will prevent it being utilized as a generator.

The electrical components are made to be able to operate for more or less 30 seconds to avoid overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are designed to save weight and cost. This is the reason the majority of owner's handbooks for vehicles suggest the operator to stop for at least 10 seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was introduced onto the market in the early part of the 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system functions on a helically cut driveshaft which consists of a starter drive pinion placed on it. Once the starter motor starts spinning, 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 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 developed during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and launched during the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights within the body of the drive unit. This was a lot better as the average Bendix drive used in order to disengage from the ring once the engine fired, although it did not stay running.

Once 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 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 prevented prior to a successful engine start.