

Forklift Starters

Starter for Forklifts - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid mounted on it. As soon as 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 that is located on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the engine flywheel.

As soon as the starter motor starts 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 just a single direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion remains engaged, for instance because the operator fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is an important step as this type of back drive would allow the starter to spin really fast that it will fly apart. Unless modifications were made, the sprag clutch arrangement will prevent making use of the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Usually a regular starter motor is designed for intermittent use which would preclude it being used as a generator.

The electrical components are made to be able to operate for approximately thirty seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are designed to save cost and weight. This is the reason the majority of owner's instruction manuals intended for automobiles suggest the operator to stop for a minimum of ten seconds after each and every 10 or 15 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 works by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor starts turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence 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 instant, the drive pinion is forced back down the helical shaft and thus 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 made and introduced during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights inside the body of the drive unit. This was much better as the typical Bendix drive utilized so as to disengage from the ring as soon as 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. Once the drive unit is spun at a speed higher than what is attained by the starter motor itself, like for example it is backdriven by the running engine, and after that the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be avoided previous to a successful engine start.