

Starter for Forklifts

Starters for Forklift - Today's starter motor is usually 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, basically through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is located on the driveshaft and meshes the pinion utilizing the starter ring gear that is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. After the engine starts, the key operated switch is opened and a spring inside the solenoid assembly pulls 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 allows the pinion to transmit drive in just one direction. Drive is transmitted in this particular way 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 as soon as the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is an important step because this kind of back drive will allow the starter to spin really fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement would preclude making use of the starter as a generator if it was used in the hybrid scheme mentioned prior. Usually a standard starter motor is intended for intermittent use that will stop it being utilized as a generator.

Hence, the electrical parts are intended to work for just about under thirty seconds in order to prevent overheating. The overheating results from too slow dissipation of heat because of ohmic losses. The electrical parts are meant to save weight and cost. This is actually the reason nearly all owner's handbooks intended for vehicles suggest the driver to stop for at least ten seconds right after every 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over at once.

The overrunning-clutch pinion was introduced onto the market in 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 which has a starter drive pinion placed on it. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was an improvement as the standard Bendix drive utilized so as to disengage from the ring once the engine fired, though it did not stay running.

The drive unit is forced forward by inertia on the helical shaft once the starter motor is engaged and starts turning. Next the starter motor 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 instance 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, hence unwanted starter disengagement could be prevented before a successful engine start.