

Forklift Starter

Forklift Starters - Today's starter motor is typically 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 positioned on the driveshaft and meshes the pinion utilizing the starter ring gear which is seen on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which begins to turn. When the engine starts, the key operated switch is opened and a spring within 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 an overrunning clutch. This allows the pinion to transmit drive in only a single direction. Drive is transmitted in this method via the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance since the driver fails to release the key once 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.

The actions discussed above will prevent the engine from driving the starter. This important step stops the starter from spinning really fast that it would fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude the use of the starter as a generator if it was employed in the hybrid scheme discussed prior. Typically a standard starter motor is intended for intermittent use which would preclude it being used as a generator.

Hence, the electrical parts are intended to work for approximately less than 30 seconds to be able to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are meant to save cost and weight. This is really the reason nearly all owner's instruction manuals intended for vehicles suggest the operator to stop for a minimum of ten seconds after each and every 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over instantly.

In 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 functions by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins turning, 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 exceed the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights inside the body of the drive unit. This was an enhancement for the reason that the standard Bendix drive utilized in order to disengage from the ring once the engine fired, though it did not stay running.

When 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. As soon as the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for example it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be avoided before a successful engine start.