

Forklift Starters and Alternators

Forklift Starters and Alternators - The starter motor nowadays is typically either a series-parallel wound direct current electric motor that includes a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. 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 using the starter ring gear that is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which begins to turn. After the engine starts, the key operated switch is opened and a spring in the solenoid assembly pulls 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 means of an overrunning clutch. This allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example since the operator fails to release the key as soon as the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin independently of its driveshaft.

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

The electrical components are made to operate for about thirty seconds to be able to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are intended to save cost and weight. This is the reason most owner's manuals intended for automobiles recommend the operator to pause for a minimum of 10 seconds right after each and every ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over right away.

In the early part of the 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 starts 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 surpass the rotating speed of the starter. At this point, 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 during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was better because the average Bendix drive used in order to disengage from the ring when the engine fired, even though it did not stay functioning.

When the starter motor is engaged and starts 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 example it is backdriven by the running engine, and afterward the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be avoided before a successful engine start.