

Forklift Alternators and Starters

Forklift Starters and Alternators - A starter motor today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid installed on it. As soon as current from the starting battery is applied to the solenoid, mainly via 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 seen on the flywheel of the engine.

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 method through the pinion to the flywheel ring gear. The pinion continues to be engaged, for instance as the operator fails to release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

The actions discussed above will prevent the engine from driving the starter. This vital step prevents the starter from spinning really fast that it can fly apart. Unless modifications were done, the sprag clutch arrangement would stop using the starter as a generator if it was used in the hybrid scheme discussed earlier. Normally a standard starter motor is designed for intermittent utilization that would preclude it being used as a generator.

The electrical components are made to work for more or less thirty seconds in order to prevent 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 nearly all owner's handbooks for vehicles suggest the operator to stop for at least 10 seconds right after every 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was launched onto the market during the early part of the 1960's. Prior to the 1960's, a Bendix drive was used. This drive system operates on a helically cut driveshaft which has a starter drive pinion placed on it. Once the starter motor begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear allows the pinion to exceed 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 which was developed and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights in the body of the drive unit. This was an enhancement since the average Bendix drive utilized to disengage from the ring when the engine fired, although it did not stay functioning.

Once 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. Once 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 after that 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 can be prevented previous to a successful engine start.