

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 with a starter solenoid installed on it. As soon as current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever which pushes out the drive pinion which is situated on the driveshaft and meshes the pinion using the starter ring gear which is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. Once 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 only one direction. Drive is transmitted in this particular method via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance because the driver did not release the key when the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This causes the pinion to spin separately of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is an important step in view of the fact that this particular type of back drive will enable the starter to spin very fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement will preclude making use of the starter as a generator if it was utilized in the hybrid scheme discussed prior. Normally a standard starter motor is meant for intermittent utilization that would stop it being utilized as a generator.

Thus, the electrical parts are designed to be able to work for around less than 30 seconds so as to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are meant to save weight and cost. This is really the reason the majority of owner's instruction manuals utilized for vehicles recommend the operator to stop for at least 10 seconds right after each and every 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over right away.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before 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 spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. As soon as the engine starts, the backdrive caused from the ring gear allows 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 referred to as the Bendix Folo-Thru drive, made and launched during the 1960s. 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 in view of the fact that the standard Bendix drive used to be able to disengage from the ring when the engine fired, even though it did not stay running.

As soon as 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, like 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 allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be avoided prior to a successful engine start.