Forklift Starter and Alternator

Forklift Starters and Alternators - A starter motors today is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. As soon as current from the starting battery is applied to the solenoid, basically through a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is positioned on the driveshaft and meshes the pinion with the starter ring gear which is found 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 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 just one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, for example in view of the fact that the driver fails to release the key when the engine starts or if the solenoid remains engaged for the reason that there is a short. This causes the pinion to spin separately of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is actually an essential step because this particular kind of back drive would allow the starter to spin very fast that it can fly apart. Unless modifications were done, the sprag clutch arrangement would prevent using the starter as a generator if it was utilized in the hybrid scheme discussed prior. Usually a regular starter motor is meant for intermittent use which will preclude it being utilized as a generator.

Hence, the electrical parts are designed to operate for around under thirty seconds so as to prevent overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical parts are intended to save cost and weight. This is the reason nearly all owner's manuals for vehicles recommend the operator to stop for a minimum of 10 seconds after every ten or fifteen 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. Prior to that time, a Bendix drive was utilized. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. As soon as 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. When the engine starts, the backdrive caused from the ring gear allows the pinion to surpass 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.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design that was made and launched in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism along with a set of flyweights within the body of the drive unit. This was much better because the typical Bendix drive utilized so as to disengage from the ring when the engine fired, though it did not stay running.

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. As soon as the drive unit is spun at a speed higher than what is attained by the starter motor itself, like for instance 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, therefore unwanted starter disengagement can be prevented previous to a successful engine start.