Forklift Starter and Alternator

Forklift Starters and Alternators - A starter motors today 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 situated on the driveshaft and meshes the pinion with 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. Once 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 permits the pinion to transmit drive in only a single direction. Drive is transmitted in this method through the pinion to the flywheel ring gear. The pinion remains engaged, for example as the operator did not release the key once the engine starts or if the solenoid remains engaged as there is a short. This causes the pinion to spin independently of its driveshaft.

The actions discussed above would stop the engine from driving the starter. This vital step stops the starter from spinning very fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement will prevent utilizing the starter as a generator if it was made use of in the hybrid scheme mentioned earlier. Normally a standard starter motor is meant for intermittent use which would prevent it being utilized as a generator.

The electrical parts are made to be able to function for about 30 seconds to be able 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 really the reason nearly all owner's guidebooks meant for automobiles suggest the driver to stop for at least ten seconds after every 10 or 15 seconds of cranking the engine, if 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. Before that time, a Bendix drive was used. The Bendix system functions by placing the starter drive pinion on a helically cut driveshaft. As soon as 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 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 thus out of mesh with the ring gear.

In the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was made and introduced in the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights inside the body of the drive unit. This was a lot better because the standard Bendix drive used to be able to disengage from the ring when the engine fired, even if it did not stay running.

Once 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. Once the drive unit is spun at a speed higher than what is attained 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 permits the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement could be prevented previous to a successful engine start.