

Forklift Starter and Alternator

Forklift Starter and Alternator - The starter motor of today is normally either a series-parallel wound direct current electric motor that has a starter solenoid, which is similar to a relay mounted on it, or it could be a permanent-magnet composition. When current from the starting battery is applied to the solenoid, mainly through a key-operated switch, the solenoid engages a lever which pushes out the drive pinion that is positioned on the driveshaft and meshes the pinion using the starter ring gear that is found on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. When the engine starts, the key operated switch is opened and a spring within 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 an overrunning clutch. This allows the pinion to transmit drive in only one direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, like for instance because the operator did not release the key when the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin independently of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is an important step as this kind of back drive would allow the starter to spin very fast that it will fly apart. Unless adjustments were made, the sprag clutch arrangement will stop utilizing the starter as a generator if it was utilized in the hybrid scheme discussed prior. Normally a standard starter motor is intended for intermittent utilization that would stop it being utilized as a generator.

The electrical components are made to be able to function for around thirty seconds so as to prevent overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical parts are intended to save weight and cost. This is really the reason nearly all owner's manuals for vehicles recommend the driver to stop for a minimum of ten seconds right after every ten or fifteen seconds of cranking the engine, when trying to start an engine which does not turn over instantly.

During 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 works by placing the starter drive pinion on a helically cut driveshaft. Once the starter motor starts turning, the inertia of the drive pinion assembly enables 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 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 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 within the body of the drive unit. This was better for the reason that the typical Bendix drive utilized so as to disengage from the ring once the engine fired, even if it did not stay functioning.

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. When the drive unit is spun at a speed higher than what is attained by the starter motor itself, for instance it is backdriven by the running engine, and next the flyweights pull outward in a radial manner. This releases the latch and enables the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided prior to a successful engine start.