

Forklift Starter and Alternator

Forklift Starter and Alternator - The starter motor these days is usually either a series-parallel wound direct current electric motor which consists of a starter solenoid, which is similar to a relay mounted on it, or it can be a permanent-magnet composition. Once current from the starting battery is applied to the solenoid, basically via a key-operated switch, the solenoid engages a lever that pushes out the drive pinion that is situated 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, that begins to turn. When 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 particular 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 one direction. Drive is transmitted in this way via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance since the operator fails to release the key once the engine starts or if the solenoid remains engaged for the reason that there is a short. This actually causes the pinion to spin separately of its driveshaft.

The actions mentioned above will prevent the engine from driving the starter. This important step prevents the starter from spinning very fast that it will fly apart. Unless modifications were done, the sprag clutch arrangement would preclude making use of the starter as a generator if it was utilized in the hybrid scheme mentioned earlier. Normally a standard starter motor is intended for intermittent use which will prevent it being utilized as a generator.

The electrical components are made so as to work for roughly 30 seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are meant to save cost and weight. This is the reason most owner's handbooks used for vehicles suggest the driver to pause for at least 10 seconds after every ten or fifteen seconds of cranking the engine, whenever trying to start an engine that does not turn over instantly.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. When 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. When the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this instant, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was made and launched during 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 because the standard Bendix drive utilized so as to disengage from the ring when the engine fired, although it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft when the starter motor is engaged and begins turning. Then the starter motor becomes latched into the engaged position. As soon as 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 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 prevented previous to a successful engine start.