

Forklift Starter and Alternator

Forklift Starters and Alternators - The starter motor of today is usually either a series-parallel wound direct current electric motor that has a starter solenoid, that is similar to a relay mounted on it, or it can be a permanent-magnet composition. When 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 located on the driveshaft and meshes the pinion using 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. After 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 permits the pinion to transmit drive in only one direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for instance as the driver did not release the key as soon as the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

The actions discussed above would stop the engine from driving the starter. This important step stops the starter from spinning really fast that it would fly apart. Unless modifications were made, the sprag clutch arrangement would prevent making use of the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Usually an average starter motor is intended for intermittent utilization which would prevent it being utilized as a generator.

Hence, the electrical parts are meant to operate for just about less than thirty seconds in order to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are meant to save weight and cost. This is the reason the majority of owner's manuals utilized for automobiles recommend the driver to pause for a minimum of ten seconds right after each 10 or 15 seconds of cranking the engine, if trying to start an engine that does not turn over at once.

During 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 works by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins 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 go beyond the rotating speed of the starter. At this point, 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 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 in the body of the drive unit. This was better in view of the fact that the standard Bendix drive utilized in order to disengage from the ring once the engine fired, although it did not stay running.

The drive unit is forced forward by inertia on the helical shaft when the starter motor is engaged and starts turning. After that the starter motor 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, 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 allows the overdriven drive unit to become spun out of engagement, hence unwanted starter disengagement can be avoided prior to a successful engine start.