

Forklift Starter and Alternator

Forklift Starters and Alternators - Today's starter motor is normally a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. Once 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 utilizing the starter ring gear that is found on the engine flywheel.

The solenoid closes the high-current contacts for the starter motor, which starts 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 particular action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by means of an overrunning clutch. This permits the pinion to transmit drive in just 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 did not release the key once the engine starts or if the solenoid remains engaged because there is a short. This causes the pinion to spin separately 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 could fly apart. Unless modifications were made, the sprag clutch arrangement will stop utilizing the starter as a generator if it was used in the hybrid scheme mentioned earlier. Usually a standard starter motor is intended for intermittent use which will preclude it being utilized as a generator.

Thus, the electrical parts are meant to be able to work for about under thirty seconds in order to avoid overheating. The overheating results from very slow dissipation of heat due to ohmic losses. The electrical components are meant to save cost and weight. This is the reason nearly all owner's guidebooks meant for automobiles recommend the driver to pause for at least 10 seconds after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over at once.

The overrunning-clutch pinion was introduced onto the market during the early 1960's. Previous to the 1960's, a Bendix drive was used. This particular drive system functions on a helically cut driveshaft which has a starter drive pinion placed on it. Once the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence 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 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 developed and launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism together with a set of flyweights within the body of the drive unit. This was much better because the average Bendix drive used to disengage from the ring once the engine fired, though it did not stay functioning.

The drive unit is forced forward by inertia on the helical shaft as soon as the starter motor is engaged and starts turning. Next 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 afterward the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, thus unwanted starter disengagement can be avoided before a successful engine start.