

Forklift Starter and Alternator

Forklift Starter and Alternator - A starter motor today is usually a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. 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 with the starter ring gear which 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 within 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 allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular way through the pinion to the flywheel ring gear. The pinion remains engaged, for example since the driver did not release the key as soon as the engine starts or if the solenoid remains engaged as there is a short. This causes the pinion to spin separately of its driveshaft.

The actions mentioned above will prevent the engine from driving the starter. This important step stops the starter from spinning so fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement would stop making use of the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Normally a regular starter motor is designed for intermittent utilization which would prevent it being utilized as a generator.

The electrical parts are made to be able to function for around 30 seconds in order to stop overheating. Overheating is caused by a slow dissipation of heat due to ohmic losses. The electrical parts are designed to save cost and weight. This is the reason nearly all owner's instruction manuals used for automobiles suggest the driver to stop for a minimum of 10 seconds after each and every ten or fifteen seconds of cranking the engine, when trying to start an engine that does not turn over right away.

During 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. As soon as the starter motor begins turning, 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 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 therefore out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive has a latching mechanism together with a set of flyweights in the body of the drive unit. This was an improvement for the reason that the average Bendix drive used to disengage from the ring as soon as 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. 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, for instance it is backdriven by the running engine, and afterward 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 could be avoided prior to a successful engine start.