

Forklift Alternators and Starters

Forklift Alternators and Starters - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor together with a starter solenoid mounted on it. As soon as current from the starting battery is applied to the solenoid, basically through 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 seen 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 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 means of an overrunning clutch. This permits the pinion to transmit drive in only a single direction. Drive is transmitted in this way through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance since the operator fails to release the key when the engine starts or if the solenoid remains engaged as there is a short. This actually causes the pinion to spin independently of its driveshaft.

This aforesaid action prevents the engine from driving the starter. This is an essential step because this particular type of back drive will enable the starter to spin so fast that it could fly apart. Unless adjustments were made, the sprag clutch arrangement will preclude making use of the starter as a generator if it was utilized in the hybrid scheme mentioned prior. Usually a standard starter motor is intended for intermittent use that would preclude it being used as a generator.

The electrical parts are made in order to operate for around 30 seconds so as to prevent overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are intended to save weight and cost. This is the reason the majority of owner's instruction manuals utilized for vehicles suggest the operator to stop for at least ten seconds after every ten or fifteen seconds of cranking the engine, if trying to start an engine which does not turn over immediately.

The overrunning-clutch pinion was introduced onto the market in the early 1960's. Prior to the 1960's, a Bendix drive was utilized. This particular drive system functions on a helically cut driveshaft that has a starter drive pinion placed on it. When the starter motor starts turning, the inertia of the drive pinion assembly allows it to ride forward on the helix, hence engaging with the ring gear. Once the engine starts, the backdrive caused from the ring gear enables the pinion to go beyond the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

The development of Bendix drive was developed during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, developed and launched in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights in the body of the drive unit. This was better since the typical Bendix drive utilized so as to disengage from the ring once the engine fired, even though it did not stay functioning.

As soon as 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, like for example it is backdriven by the running engine, and then the flyweights pull outward in a radial manner. This releases the latch and permits the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be prevented before a successful engine start.