

Forklift Starters

Forklift Starter - The starter motor of today is normally either a series-parallel wound direct current electric motor which includes a starter solenoid, that 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, mainly 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 seen on the flywheel of the engine.

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 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 there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

The actions discussed above will prevent the engine from driving the starter. This significant step prevents the starter from spinning so fast that it could fly apart. Unless modifications were made, the sprag clutch arrangement would stop the use of the starter as a generator if it was utilized in the hybrid scheme discussed prior. Typically a standard starter motor is meant for intermittent use that will preclude it being used as a generator.

Thus, the electrical parts are meant to operate for about less than thirty seconds to be able to avoid overheating. The overheating results from too slow dissipation of heat due to ohmic losses. The electrical parts are meant to save cost and weight. This is the reason most owner's handbooks intended for vehicles suggest the operator to pause for a minimum of 10 seconds after each and every 10 or 15 seconds of cranking the engine, when trying to start an engine that does not turn over instantly.

The overrunning-clutch pinion was launched onto the market in the early part of the 1960's. Previous to the 1960's, a Bendix drive was utilized. This drive system operates on a helically cut driveshaft that has a starter drive pinion placed on it. Once the starter motor begins spinning, the inertia of the drive pinion assembly enables it to ride forward on the helix, thus engaging with the ring gear. Once 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 developed during the 1930's with the overrunning-clutch design called the Bendix Folo-Thru drive, made and introduced during 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 in view of the fact that the standard Bendix drive used in order to disengage from the ring when the engine fired, even if it did not stay functioning.

As soon as the starter motor is engaged and starts turning, the drive unit is forced forward on the helical shaft by inertia. It then becomes latched into the engaged position. Once the drive unit is spun at a speed higher than what is attained by the starter motor itself, for example 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, therefore unwanted starter disengagement could be prevented previous to a successful engine start.