

Starters for Forklift

Forklift Starters - The starter motor these days is usually either a series-parallel wound direct current electric motor that includes a starter solenoid, which 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 through 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 engine flywheel.

The solenoid closes the high-current contacts for the starter motor, that starts to turn. When 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 an overrunning clutch. This permits the pinion to transmit drive in only a single direction. Drive is transmitted in this particular method through the pinion to the flywheel ring gear. The pinion remains engaged, for example because the driver fails to release the key when the engine starts or if there is a short and the solenoid remains engaged. This actually causes the pinion to spin separately of its driveshaft.

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

The electrical parts are made to work for more or less 30 seconds to avoid overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical components are intended to save weight and cost. This is the reason most owner's instruction manuals for automobiles suggest the operator to pause for at least ten seconds right after every 10 or 15 seconds of cranking the engine, if trying to start an engine which does not turn over immediately.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Before that time, a Bendix drive was used. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. 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. As soon as the engine starts, the backdrive caused from the ring gear enables the pinion to surpass the rotating speed of the starter. At this point, the drive pinion is forced back down the helical shaft and therefore 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 launched during the 1960s was the Bendix Folo-Thru drive. The Folo-Thru drive has a latching mechanism along with a set of flyweights within the body of the drive unit. This was an enhancement as the average Bendix drive used in order to disengage from the ring when the engine fired, even though 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. Once the drive unit is spun at a speed higher than what is achieved by the starter motor itself, like for instance 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 could be prevented before a successful engine start.