

Starter for Forklifts

Forklift Starter - The starter motor of today is typically either a series-parallel wound direct current electric motor that consists of 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 which 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 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 particular way via the pinion to the flywheel ring gear. The pinion continuous to be engaged, for instance as the operator did not release the key as soon as the engine starts or if the solenoid remains engaged in view of the fact that there is a short. This actually causes the pinion to spin separately of its driveshaft.

This above mentioned action stops the engine from driving the starter. This is an important step since this particular kind of back drive would enable the starter to spin really fast that it can fly apart. Unless adjustments were made, the sprag clutch arrangement would preclude using the starter as a generator if it was utilized in the hybrid scheme discussed earlier. Typically a regular starter motor is designed for intermittent use which would prevent it being used as a generator.

The electrical parts are made to work for more or less 30 seconds to stop overheating. Overheating is caused by a slow dissipation of heat is due to ohmic losses. The electrical parts are designed to save weight and cost. This is actually the reason nearly all owner's handbooks for automobiles recommend the driver to stop for at least ten seconds right after each and every ten or fifteen seconds of cranking the engine, whenever trying to start an engine which does not turn over instantly.

In the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Prior to that time, a Bendix drive was utilized. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. When the starter motor begins 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 go beyond the rotating speed of the starter. At this point, 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 known as the Bendix Folo-Thru drive, made and launched during the 1960s. 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 in view of the fact that the typical Bendix drive utilized to disengage from the ring once the engine fired, although 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 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, thus unwanted starter disengagement can be prevented previous to a successful engine start.