Forklift Starter

Starter for Forklifts - Today's starter motor is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor along with a starter solenoid installed on it. As soon as 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 positioned on the driveshaft and meshes the pinion using 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 begins 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 action causes the starter motor to stop. The starter's pinion is clutched to its driveshaft by means of an overrunning clutch. This allows the pinion to transmit drive in just a single direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion continuous to be engaged, for example since the operator fails to release the key once the engine starts or if the solenoid remains engaged because there is a short. This actually causes the pinion to spin independently of its driveshaft.

This aforementioned action prevents the engine from driving the starter. This is an essential step since this particular kind of back drive will allow the starter to spin so fast that it can fly apart. Unless modifications were made, the sprag clutch arrangement will preclude utilizing the starter as a generator if it was made use of in the hybrid scheme discussed prior. Normally an average starter motor is intended for intermittent utilization that will prevent it being utilized as a generator.

Thus, the electrical components are meant to work for just about under thirty seconds to prevent overheating. The overheating results from very 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 meant for vehicles recommend the operator to pause for a minimum of ten seconds right after each ten or fifteen seconds of cranking the engine, if trying to start an engine which does not turn over right away.

In the early 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to that time, a Bendix drive was used. The Bendix system operates by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor begins spinning, the inertia of the drive pinion assembly enables 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 instant, 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 referred to as the Bendix Folo-Thru drive, made and launched in the 1960s. The Folo-Thru drive has a latching mechanism along with a set of flyweights inside the body of the drive unit. This was a lot better because the average 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. As soon as 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 then 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 can be avoided prior to a successful engine start.