Starter for Forklifts

Forklift Starters - The starter motor these days 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 could be a permanent-magnet composition. Once 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 which is located on the driveshaft and meshes the pinion utilizing the starter ring gear which is found on the engine flywheel.

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 within 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 an overrunning clutch. This allows the pinion to transmit drive in just a single direction. Drive is transmitted in this manner via the pinion to the flywheel ring gear. The pinion remains engaged, for example because the operator did not release the key when the engine starts or if the solenoid remains engaged for the reason that there is a short. This causes the pinion to spin independently of its driveshaft.

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

Thus, the electrical components are designed to be able to function for roughly under thirty seconds to be able to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical components are meant to save cost and weight. This is the reason most owner's instruction manuals used for vehicles suggest the driver to pause for at least 10 seconds after each and every 10 or 15 seconds of cranking the engine, whenever trying to start an engine which does not turn over instantly.

During the early part of the 1960s, this overrunning-clutch pinion arrangement was phased onto the market. Previous to 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 begins spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, thus engaging with the ring gear. When the engine starts, the backdrive caused from the ring gear enables the pinion to exceed the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and hence out of mesh with the ring gear.

The development of Bendix drive was made in the 1930's with the overrunning-clutch design known as 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 inside the body of the drive unit. This was an enhancement for the reason that the standard Bendix drive utilized to be able to disengage from the ring once the engine fired, although it did not stay running.

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 afterward 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 avoided before a successful engine start.