Starters for Forklift

Forklift Starters - A starter motors today is typically a permanent-magnet composition or a series-parallel wound direct current electrical motor with a starter solenoid installed on it. When current from the starting battery is applied to the solenoid, mainly 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 with the starter ring gear which is found on the flywheel of the engine.

As soon as the starter motor begins to turn, the solenoid closes the high-current contacts. Once the engine has started, the solenoid has a key operated switch which opens the spring assembly to pull 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 allows the pinion to transmit drive in only a single direction. Drive is transmitted in this particular manner via the pinion to the flywheel ring gear. The pinion remains engaged, like for example as the driver did not release the key once the engine starts or if there is a short and the solenoid remains engaged. This causes the pinion to spin independently of its driveshaft.

This above mentioned action prevents the engine from driving the starter. This is actually an important step because this kind of back drive will allow the starter to spin so fast that it could fly apart. Unless adjustments were done, the sprag clutch arrangement will prevent utilizing the starter as a generator if it was used in the hybrid scheme mentioned prior. Typically a standard starter motor is intended for intermittent utilization which would stop it being utilized as a generator.

The electrical components are made to be able to function for more or less thirty seconds so as to stop overheating. Overheating is caused by a slow dissipation of heat is because of ohmic losses. The electrical components are meant to save weight and cost. This is the reason most owner's instruction manuals meant for vehicles recommend the operator to stop for a minimum of ten seconds right after each ten or fifteen seconds of cranking the engine, when 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 utilized. The Bendix system works by placing the starter drive pinion on a helically cut driveshaft. As soon as the starter motor starts spinning, the inertia of the drive pinion assembly allows it to ride forward on the helix, therefore engaging with the ring gear. When 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 therefore out of mesh with the ring gear.

The development of Bendix drive was made during the 1930's with the overrunning-clutch design known as the Bendix Folo-Thru drive, developed and introduced in the 1960s. The Folo-Thru drive consists of a latching mechanism together with a set of flyweights within the body of the drive unit. This was better as the typical Bendix drive used to disengage from the ring when the engine fired, even if it did not stay running.

The drive unit if force forward by inertia on the helical shaft once the starter motor is engaged and begins turning. Afterward the starter motor 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, like 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, thus unwanted starter disengagement could be prevented before a successful engine start.