Forklift Starters

Starter for Forklifts - The starter motor nowadays is normally either a series-parallel wound direct current electric motor that 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 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 utilizing the starter ring gear which is seen on the flywheel of the engine.

The solenoid closes the high-current contacts for the starter motor, that begins to turn. After 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 means of an overrunning clutch. This permits the pinion to transmit drive in just one direction. Drive is transmitted in this manner through the pinion to the flywheel ring gear. The pinion remains engaged, like for instance for the reason that the operator did not release the key when 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 aforesaid action stops the engine from driving the starter. This is actually an essential step as this type of back drive will enable the starter to spin so fast that it will fly apart. Unless adjustments were done, the sprag clutch arrangement would stop using the starter as a generator if it was employed in the hybrid scheme mentioned earlier. Typically an average starter motor is designed for intermittent utilization that will preclude it being utilized as a generator.

Thus, the electrical parts are meant to work for more or less less than thirty seconds in order to avoid overheating. The overheating results from very slow dissipation of heat because of ohmic losses. The electrical parts are designed to save weight and cost. This is the reason the majority of owner's instruction manuals utilized for automobiles recommend the driver to stop for at least 10 seconds right after each 10 or 15 seconds of cranking the engine, whenever trying to start an engine that does not turn over right away.

During 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 functions by placing the starter drive pinion on a helically cut driveshaft. When 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. When the engine starts, the backdrive caused from the ring gear allows the pinion to go beyond the rotating speed of the starter. At this moment, the drive pinion is forced back down the helical shaft and thus out of mesh with the ring gear.

During the 1930s, an intermediate development between the Bendix drive was made. The overrunning-clutch design which was developed and introduced in 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 improvement because the typical Bendix drive utilized to be able to disengage from the ring once the engine fired, though it did not stay running.

Once 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. Once 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 after that the flyweights pull outward in a radial manner. This releases the latch and allows the overdriven drive unit to become spun out of engagement, therefore unwanted starter disengagement could be avoided previous to a successful engine start.