

# Electric clutches on the go

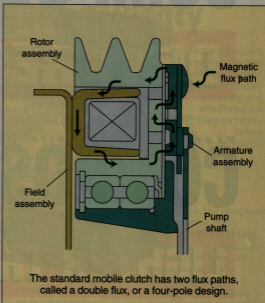
Although many design engineers equate electric clutches and brakes with industrial applications, they also have a variety of uses in mobile applications. The electromechanical clutches' simple operation and basic design easily incorporate into mobile equipment, providing flexibility, safety, and cost savings on gas and diesel engines.

Mobile clutches typically consist of three major subassemblies. The field assembly is the coil and backing flange that provides magnetic flux to engage the clutch. The rotor assembly includes the pulley and bearing and is normally the point of input to the clutch. The armature assembly includes the armature disc, springs, and hub and is normally the output.

The field assembly mounts to a stationary member such as a pump support bracket. The rotor, driven by an engine belt, rotates constantly. Energizing the clutch pulls the armature against the rotor and drives the output. Magnetic attraction engages the armature and rotor. Applying direct current to the field assembly creates the magnetic field. The magnetic flux transfers from the field assembly into the rotor and armature. Slots, called banana slots, allow the flux to contact the rotor and armature in more than two places. Multiple points of flux connection increase the torque of a clutch. Switching off power to the coil disengages the clutch. Springs between the armature and hub allow an air gap to be created so the armature does not make contact when the clutch is disengaged.

Besides engaging the load, electric clutches can provide original equipment manufacturers and users the following benefits:

**Powering multiple components.** In applications where several pumps operate off one engine, an electric clutch on each pump disengages them when not in use.



This reduces power consumption from the engine and increases pump life.

**Cold-weather starting.** Many gas and diesel engines must warm up before they deliver full-rated power. An electric clutch disconnects the load from the engine, allowing it to heat up before engaging the load.

**Safety.** In circumstances where the operator should not be near the engine, a remote switch can control engagement and disengagement of the load from a safe distance.

**Reduced power consumption.** By disconnecting the engine from the load, the engine is not consuming additional power required to turn the load.

**Longer component life.** Disconnecting driven components from the engine means that they are not constantly rotating. This can greatly increase component life, which provides a cost savings in terms of parts, labor, and down time.

*This information provided by Ogura Industrial Corporation, Somerset, N.J.*

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