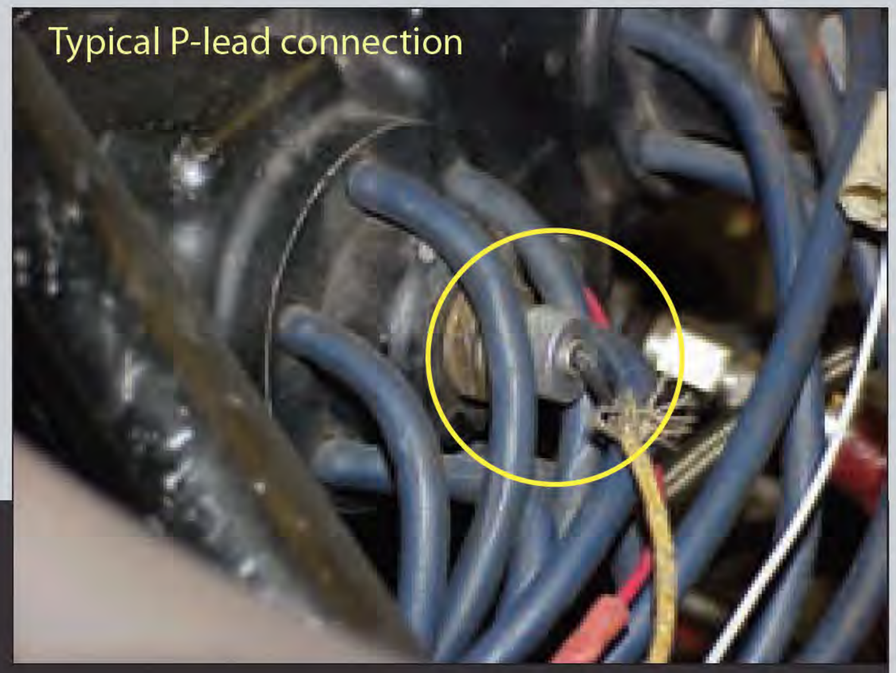
Starting Your Engine

The exact sequence of events occurring when an aircraft piston engine is started varies with the airplane, its manufacturer and how it's configured. That said, the following description will apply to most piston-powered personal airplanes with either a Lycoming or Continental engine.

When the starter is engaged (a typical Lycoming starter is pictured at top), an impulse-coupling magneto—usually the left one—mechanically "grabs" the shaft and a spring coils quickly, then releases to spin the magneto fast enough to generate the first spark for the engine. The right magneto usually is grounded while the starter is engaged. A retard-breaker magneto utilizes a battery-energized pulse generator to produce the spark necessary to start the engine.

Both systems result in sparks in the engine at about top-dead-center (TDC), which is considerably later than the normal magneto timing, but just perfect for kicking over an engine and getting it to fire. Once the engine is running and/or the starter switch is released, the impulse-coupling is thrown loose by centrifugal force (or the shower of sparks de-energizes), both mags come online and the timing reverts to normal (20-30 degrees before TDC).

Remember, a hard-starting engine could be magneto/ignition problems. Get it checked out before you go fly!



TYPICAL MAGNETO SWITCHING

- **IGNITION OFF:** Both magneto P-leads (see the photo at right) are connected to electrical ground. This disables both magnetos; no spark is produced.
- **SWITCH TO RIGHT MAGNETO:** The left magneto P-lead is grounded, and the right is open. This disables the left magneto and enables the right magneto only.
- **SWITCH TO LEFT MAGNETO:** The right magneto P-lead is grounded, and the left is open. This disables the right magneto and enables the left magneto only.
- **SWITCH TO BOTH MAGNETOS:** This is the normal operating configuration; both P-leads are open, enabling both magnetos.
- **SWITCH TO START:** The gear on the starter motor is engaged with the flywheel and the starter motor runs to turn the engine over. In most cases, only the left magneto is active (the right P-lead is grounded).