

CPI-2 Lycoming Ignition Installation

May 22/19

This Manual Covers Lycoming Specific Ignition System Hardware Installation

Disclaimer

These products do not conform to any recognized set of standards or certifications for aviation applications.

This ECU is not waterproof and will not function as designed if moisture invades the enclosure or power/ground connections are interrupted.

Failure of this unit may result in a complete loss of engine power.

Use of these products on amateur built/ experimental aircraft is at the discretion of the buyer who accepts full responsibility for any consequences resulting from its use. Since Racetech Inc. cannot control the installation, programming, application environment or use of its products, we accept no responsibility for damage, loss or personal injury resulting from the use of SDS products. **By using SDS products, the user understands and accepts this.**

If any user does not agree to this disclaimer, they may return the system/ parts in new condition for a full refund.

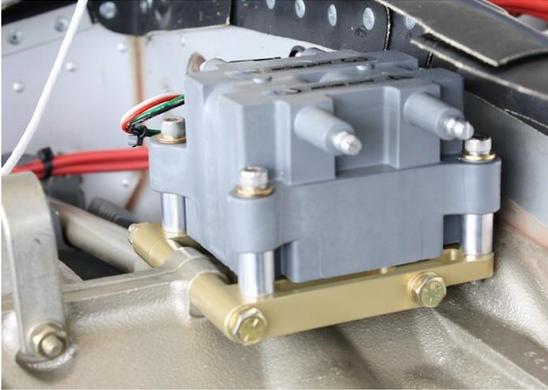
Coil Pack(s)

Most aviation systems will come with either a gray four cylinder coil pack or black six cylinder coil pack. The grey ones have integral drive transistors, the black ones use an external drive module bolted to the coil mount. These are fired in a waste spark configuration, which means two plugs are fired at the same time. One plug is fired on compression, the other on exhaust when no mixture is present. Both types may be engine mounted in any orientation. We offer several mounting brackets for Lycoming applications and flat type bases for firewall mounting.



4 and 6 cylinder coil packs with rear mag mounts

Important! If you're replacing the magnetos on 6 cylinder engines, be sure to remove the drive gear, coupler and bearing models from the case before installing the SDS mag covers or coil mounts. Use a thin layer of RTV and no gasket on the mag covers before tightening the nuts.



4 cylinder top case coil pack mount



6 cylinder top case coil pack mount

Coil pack upper case through bolts torqued to 75 inch/ lbs.



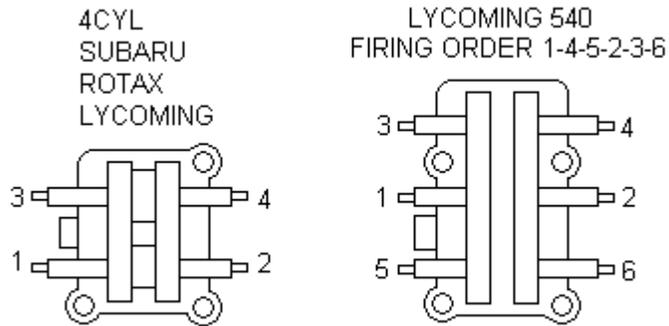
Rear mag mount for 6 cylinder coil pack

Magneto Covers



When removing the magnetos and not mounting coil packs in their place, you'd install the covers shown above. We recommend you use RTV and no gaskets.

Plug Wire Connections to 6cyl Coil Packs



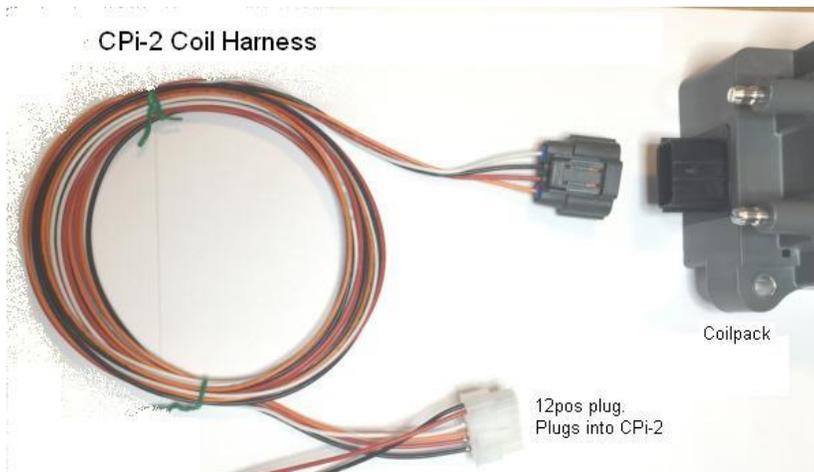
CPI-2 Coil pack harness photos, 6cyl and 4cyl

6cyl



Insert red, black, orange, white and blue (6cyl) terminals into 12pos white plug after you've routed and passed these through the firewall.

4cyl



Wiring Cautions

IMPORTANT! Never tie wrap any sensor cables or other system wires to the spark plug wires. This can cause interference, rough running and even system damage. Allow at least 1 inch clearance with system wires from spark plug wires.

18 to 14mm Plug Adapters

We provide brass adapters to convert Lycoming 18mm plug threads over to 14mm in order to utilize less expensive automotive type plugs.

Assembly: Install plugs into adapters and slide the copper washer over the adapter. Use only a thin stripe of anti-seize compound on the plug and adapter. Do not coat the threads.

1. Thread the spark plug into the adapter 2. Torque the assembly into the cylinder head using the PLUG hex to 19ft./lbs. 3. Torque the ADAPTER further to 25 ft./lbs.



Long reach



Short reach

Hall Effect Sensor and Mounts

We provide CNC'd Hall sensor mounts for Lycomings using the 8 7/16 ID flywheel. These bolt to the front most case bolts on the right side of the case. Remove the stock case bolt nuts and torque the provided new standoff nuts to 300 in/ lbs. We provide white fire sleeve for Hall cables.



Narrow mount for engines with 3.25 inch bolt spacing



Wide mount for 3.50 inch spacing

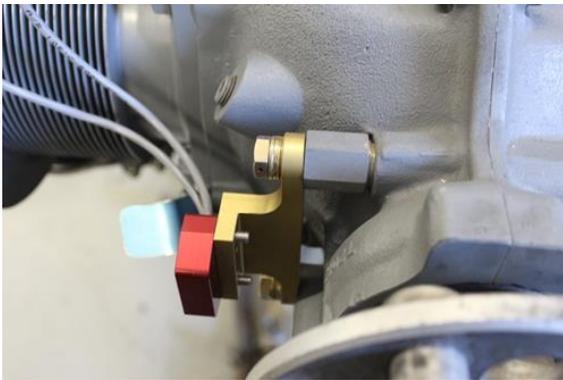
Magnet to Hall Sensor Air Gap

The air gap dimension is measured in the center of the red sensor block. The single sensors are narrower than the twin sensor block so there is necessarily more air gap with the twin sensor when the edge gap is the same. Magnets will trigger out to nearly .250.

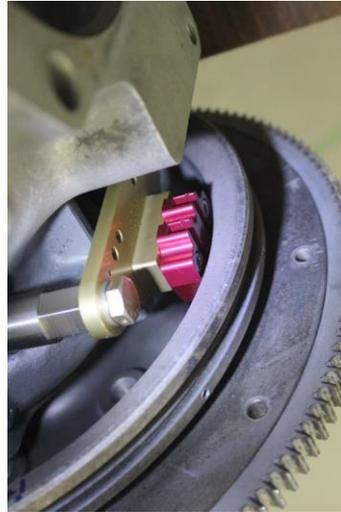
Typically with a single sensor block, .025 edge clearance gives you about .060 air gap

and on the twin sensor, you have around .090 air gap with .025 edge gap. We provide a variety of 3/8 standard and light washers to go under the gold sensor mount to get proper clearances. You should have at least one washer between the hex head of the 3/8 bolt and gold mount. You can juggle the remaining thick and thin washers between the standoffs and gold mount to get proper flywheel clearance.

Check to be sure that the 3/8 bolt shank does not bottom out against the case bolt inside the standoff. This can't happen with the 3.50 mount but possibly could on the 3.25 mount which uses a shorter standoff. If it does, place another washer under the head of the hex bolt.

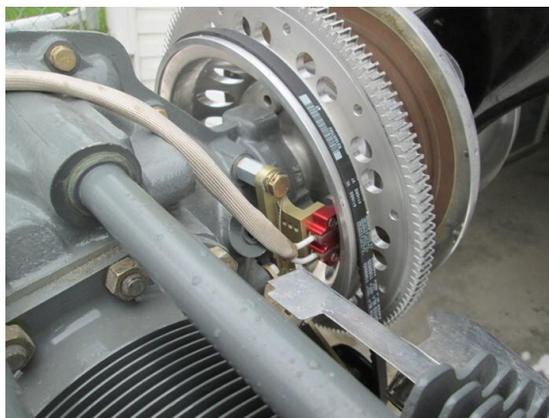
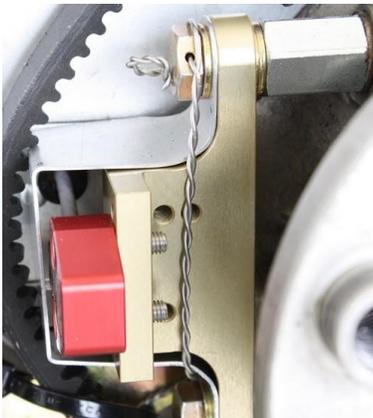


Narrow mount on case



Wide mount on case with flywheel

The Hall sensors are offered in a single or dual setup for single or dual ECUs. The mounts can accept either type. The mounts have multiple 10-32 threaded holes to attach cable protection shields if users are concerned about a thrown or broken belt damaging the Hall sensor cables.



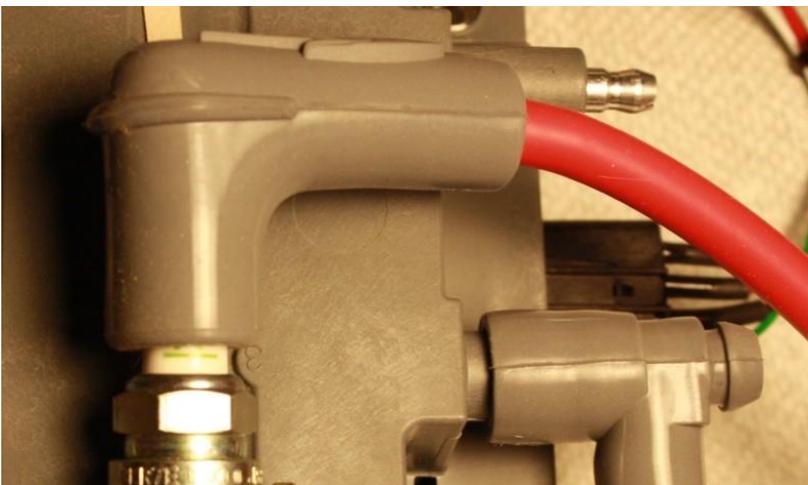


Note lock wire provisions on bolts

Plug Wires, Boots and Terminals

We can supply MSD 8.5mm Superconductor wires, MSD plug/coil boots and MSD terminals to properly fit your coil packs. If you don't use these components, be sure to always use quality EMI/ Magnetic Suppression wires. **Never use solid core, non-suppression wires with SDS. You must always use resistor type plugs as well.** Keep the wires away from exhaust pipes or anything which could chaff through the insulation. Be sure to properly crimp the terminals as shown here: <https://www.youtube.com/watch?v=8kQDSlpKrCw> and see the file at the end of this manual. Make your longest wire first and add 1 inch in case the insulation pulls away some of the conductor with it when stripped. Lubricate the terminal and ID of boots with glycerin based hand sanitizer before trying to slide boot over terminal. We recommend you purchase MSD crimping tool PN 35051 or if you have a similar crimper, you can buy just the jaw set PN 2048. If you are running twin coil packs, you should run a plug wire from each coil pack to each plug on a cylinder. This provides maximum redundancy in the event that one coil pack fails.

Be sure you push the plug and coil boots all the way down to engage the terminals fully with a "click". There should be about a 1/8 inch gap as shown in the photo below



MSD INSTALLATION INSTRUCTIONS

Dual Crimp Terminal Installation

ONLINE PRODUCT REGISTRATION: Register your MSD product online and you'll be entered in our monthly 8.5mm Super Conductor Spark Plug Wire give-away! Registering your product will help if there is ever a warranty issue with your product and helps the MSD R&D team create new products that you ask for! Go to www.msperformance.com/registration.

The terminals supplied feature a new Dual Crimp Terminal. The benefits of the new wire terminal is that the conductor has its own crimp to the terminal so it does not need to be bent over and pressed between the terminal and the sleeve of the plug wire. Following is a new crimp procedure for the Dual Crimp Terminal.

1. Strip approximately 1/4" of sleeving from the wire. When using the Mini-Stripper-Crimper, **do not** push the wire all the way into the tool to strip it. **Note:** Use extreme care not to damage the conductor.
2. Follow the standard instructions to crimp the terminal to the sleeve of the wire. **Do not** use the Mini-Crimper to crimp the conductor.
3. Position the conductor between the "conductor tabs" of the terminal. Using needle nose pliers, push the tabs towards each other so they firmly grip the conductor. Make sure the conductor does not squeeze out as you apply pressure to the tabs.

