

## Magnet Installation on Six Cylinder Lycoming Engines. 8 7/16 inch ID Flywheels Only. Oct. 23/19

Your flywheel should have 12 holes spaced 30 degrees apart as shown in the photo below. These holes will be used to reference drilling of the flywheel for the 4 magnets supplied. Note the TDC mark is at 12 o'clock and the Hall sensor is shown at the 3 o'clock position.



We recommend that you number each of the twelve 1/4 inch holes in the flywheel with marker as shown below starting at the TC#1 hole as 1.



1. Locate the TDC mark on the Back side of the flywheel, stamped TC#1 as shown below.



1. Now viewing the flywheel from the back side, counting the hole closest to the TC#1 mark as 1, count over 6 holes in the direction of crankshaft rotation (clockwise as viewed from the BACK of the flywheel). Line the round edge of the drilling block with this hole, slip the supplied bolts through the block and holes 6 and 7 as shown below
2. Verify that the center of the drill bit is in the center of the flywheel before you start drilling. You can rotate the bit by hand and see where the mark is. Tighten the nuts so that the block is held firmly in place before drilling.





3. Use the supplied #29 drill to drill through the drilling block and flywheel as shown below. Lubricate the drill and remove frequently to clean out the chips. Mark the flywheel close to the hole as “#1T” with marker.



This hole is for the #1 trigger magnet

4. Move the drilling block over one set of holes (7 and 8 from TDC mark) in the direction of rotation and bolt the block in place. Drill through the flywheel here. This is the hole for the Synch Magnet. See photo below. Mark this hole as “S” and drill through flywheel as before.



5. Now, move drilling block over so that bolts go through holes 10 and 11. Mark this hole as #2T.



6. This is the #2 Trigger Magnet hole and should be 120 degrees across from the #1 Trigger Magnet hole. Mark this hole as “#2T”. Drill through the flywheel.

7. Move the drilling block over to holes 2 and 3. This should place the #3 trigger magnet equidistant from the other 2 trigger magnets. Drill through the flywheel as before.



Remove the drilling block and insert the supplied 8-32 tap, lubricated with tap oil, into each drilled hole. CAREFULLY tap until the tip of the tap is flush with the ID of the flywheel, don't tap all the way through. Break the chips on every turn of the tap and clean the tap and hole of chips with compressed air frequently to prevent jamming and breaking the tap. Clean the holes out with acetone to remove all traces of oil.

8. You're now ready to insert the Allen head set screws into each hole from the outside edge. Test fit each set screw into the threaded holes. They should go in far enough that the supplied magnets rest flush with the inner flywheel face. Adjust the depth of the set screws to achieve flush magnet mounting in each hole.
9. Remove the magnets. Use the extra magnet to extract the other magnets from their holes.
10. Mix up some 5 minute epoxy and dab a small amount into the #1 trigger magnet hole ( marked "#1T"). Insert one of the magnets into the hole with the BLUE END facing into the center of the flywheel. Push the magnet into the hole until it contacts the set screw. You may have to use a short piece of non-ferrous material to do this.
11. Dab some epoxy into the Synch Magnet hole (marked "S"). Insert a magnet with the BLUE END facing the set screw. This magnet is inverted from the other three. (Very important).

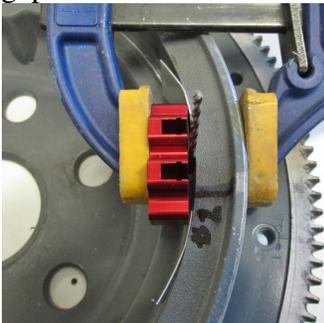
12. Dab some epoxy into the last hole marked “#2T” and insert a magnet with the BLUE END facing into the center of the flywheel.
13. Dab some epoxy into the last hole marked “#3T” and insert a magnet with the BLUE END facing into the center of the flywheel.
14. Once the epoxy sets, you can put a small drop of blue Loctite on a second set screw and screw it just snug against the first set screw to lock the first ones in place.
15. Use the long nuts to replace the factory Lycoming nuts on the right side of the front most case bolts near the propeller end and retorque to factory specs.
16. Use the washers supplied to ensure there is at least .025 clearance from the edges of the red Hall sensor to the inner face of the flywheel. An air gap of between .060 to .100 is acceptable from the center of the red Hall sensor to the inner flywheel face as measured with a narrow feeler gauge or shim placed between the center of the sensor face and flywheel face.
17. Be sure to remove any unused mag drive parts- the left side cush drive, gear/cup and bearing as shown on the last page.

### **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. Basically if you have .025 to .040 edge gap, you'll be fine with the air gap.

The photo below shows a twin sensor with .025 shim stock in the corners to simulate edge clearance and a #40 drill bit stuck in the center to show the air gap. The actual air gap over the Hall sensor elements is a bit less than that.



Magnet installation video:

<https://www.youtube.com/watch?v=v1WQOfWPMp8>