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Process Specification: CS01-4

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Subject: Process Specification – Cold Start Kit Installation

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Prepared	Checked
	
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Issue	Details of Change
1	Initial Issue
2	Revised for new sender. Photos added.
3	Revert back to Mk1 sender, photos and descriptions changed to suit
4	Specify two fibre washers for cold start coil to clear ring gear

1 Details

1.1 General

This procedure describes the installation process for the Cold Start Ignition Kit. This Kit provides an artificial boost to the ignition spark for cold start situations where the starter motor has trouble cranking fast enough to generate a solid spark.

"Left" and "Right" below are with reference to the pilot's view of the engine out in front, in a tractor installation.

1.2 Applicability

The following procedure is applicable and approved by Jabiru Aircraft Pty Ltd to be carried out to Jabiru Engines operating in the following categories:

- Special Light Sport Aircraft
- Experimental Light Sport Aircraft
- Other Experimental categories – including "Experimental – Amateur-Built".
- International equivalents to these Australian categories.
- International categories allowing modifications approved by the manufacturer.

1.3 Before You Start

The following procedure involves making modifications to the engine ignitions. The procedure is relatively simple, however there is potential to severely damage the electrical circuit and components or to prevent the ignitions from operating correctly.

In the context of the "Spanner Scale" used in the current engine maintenance and overhaul manuals, this is considered a "3-spanner" task: *"Straightforward, but requires special tools, training and/or judgement. Sound basic knowledge guidance and a careful approach are required."*

Personnel must realistically assess their skills and equipment before carrying out this task. If in doubt, professional assistance must be sought. Personnel must hold current maintenance approvals appropriate to the aircraft's operating category.

1.4 Recording

On completion of the work the aircraft or engine's maintenance logbook must be annotated to indicate completion of the work in accordance with Jabiru Aircraft Procedure CS01-4.

1.5 Removal of Standard Configuration Parts

a) Before starting, remove the cowls and disconnect the battery so that any inadvertent short while working on the starter solenoid or ignition will not result in the starter motor engaging or the engine starting.
b) Remove the Left-Hand side Ram air duct to allow access for removal of other parts.
c) Remove the Left-hand Coil, when looking at the engine from behind.
d) Remove the 2 long AN-4 bolts on the 'Spider' plate left side.
e) If your engine runs a Hall-Effect Sensor Tachometer sender on the left side of the engine, this must be removed to make room for the cold start ignition kit. Do this by removing the bolt through the spider: keeping the flange attached to the sender itself. Where equipped, this sensor is the same type as is used for the cold start ignition kit and is shown below: it is a stainless steel threaded cylinder about 13mm in diameter with a wire in one end. Measure the distance from the 'Spider' mounting bolt to the bolt holding the Hall Effect sensor in place – record this.
f) Re-fit the tachometer Hall effect sender on the right side of the engine. For a 2200 engine the position of the sender can be "mirrored" to be in the same place on the right side as it was on the left

originally. For the 3300 engine it must be installed on the right side of the engine according to the rules shown in Figure 7: i.e. aligned over the ignition magnets.

1.6 Cold Start Kit Installation

a) Install the modified ignition Coil supplied as a part of the cold start ignition kit. Refer to the Engine Maintenance Manual (Document JEM0002) for details on setting the Coil gap correctly.

b) Before going any further check there is adequate clearance between the modified cold start coil and the flywheel ring gear (shown in Figure 1 left) if required two fibre washers should be used instead of one to gain more clearance (shown in Figure 1 right).

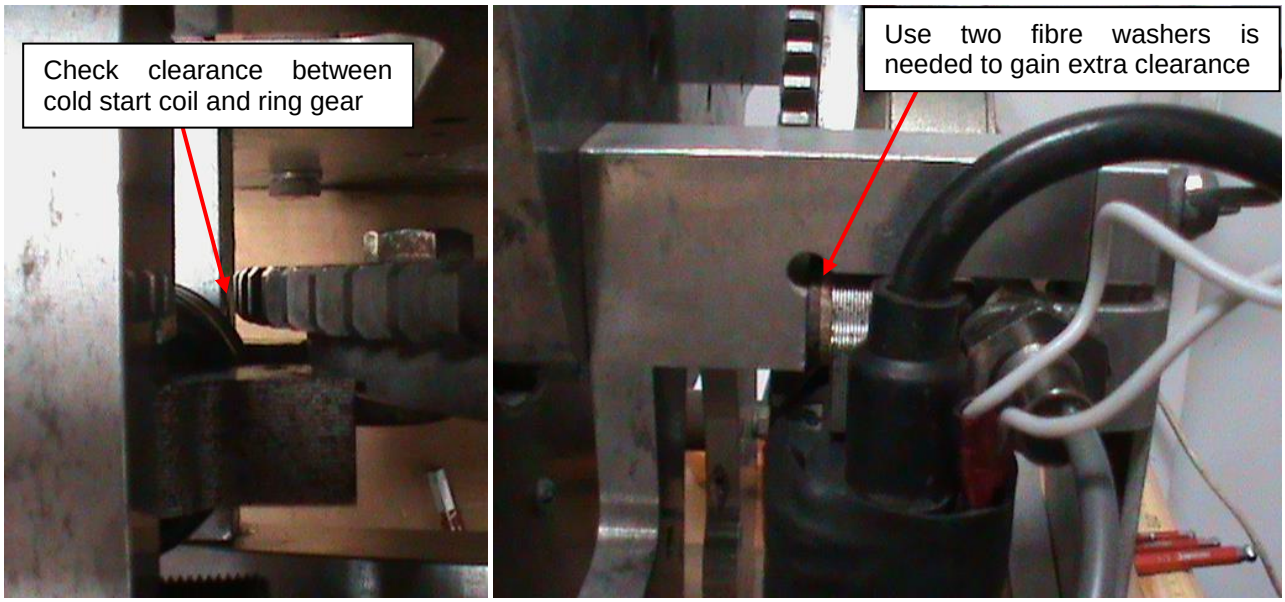

Figure 1 - Check cold start coil clearance from ring gear

c) Install the mounting plate as shown in Figure 2 below. Use the supplied longer bolts to account for the thickness of the cold start ignition kit mounting plate. Ensure the module mounting screws are tightened securely (refer to the engine overhaul manual, document JEM0001, for appropriate torque settings). The ignition earth lead is connected via one of the machined screws that are used on the module (Figure 3).

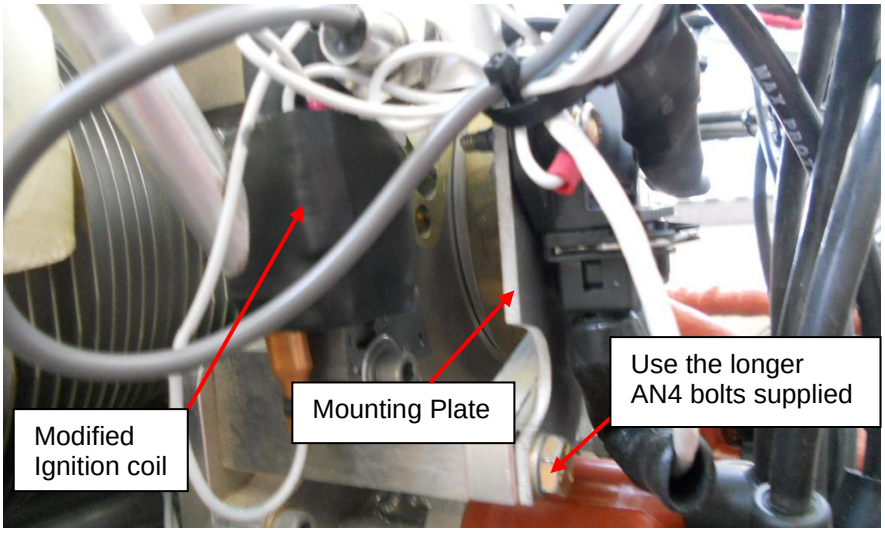

Figure 2 - Modified coil and mount plate installation

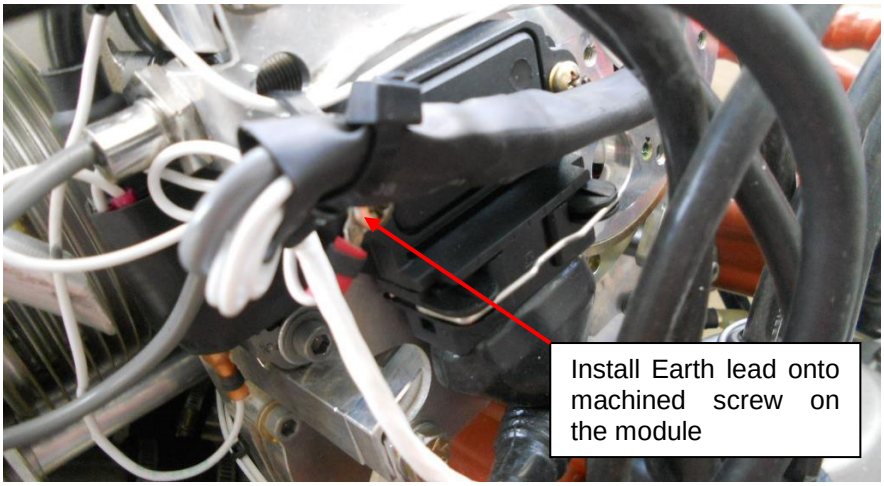

Figure 3 - Earth lead installation

d) Install the provided Hall Effect Sensor into the mounting plate on the left side of the engine (see Figure 4). This sensor should be installed as far through as possible, then tighten the retaining nut securely. Since the Sensor is installed orthogonally to the flywheel rotation axis, no adjustment can be made to bring the sensor closer to the flywheel; this also removes the possibility of the sender striking the flywheel due to small movements in the crankshaft during operation.

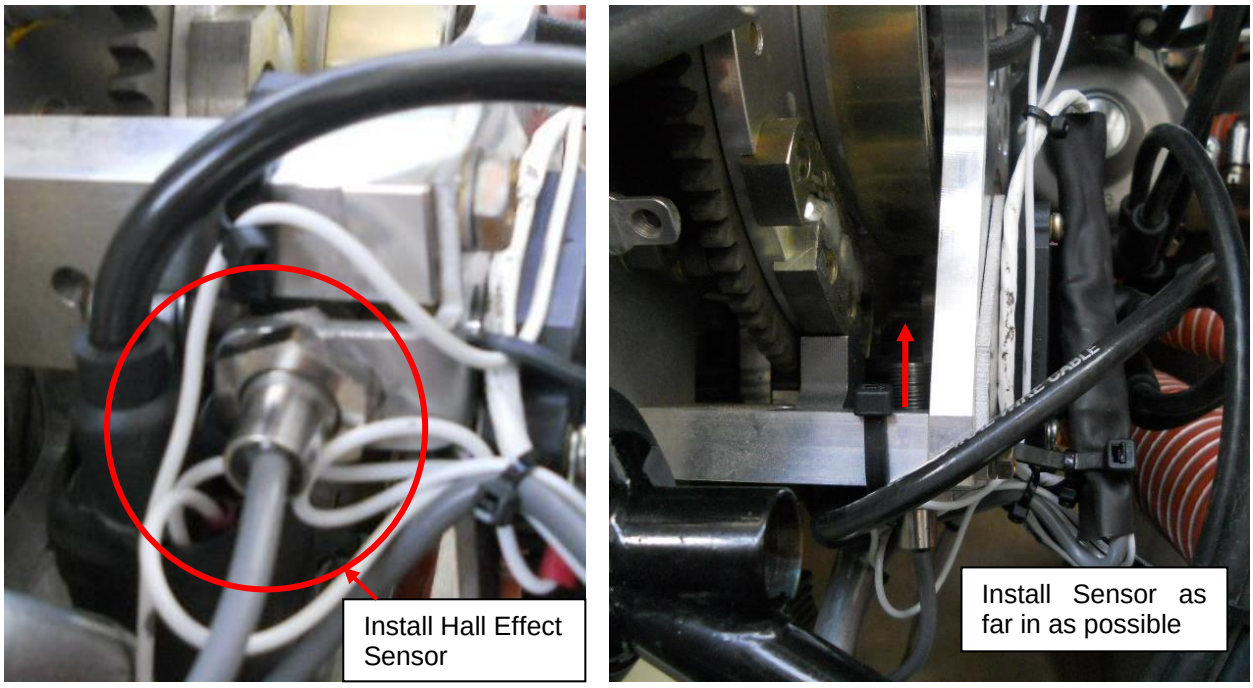

Figure 4 - Hall effect sensor installation

e) Connect the power lead via the Solenoid to the starter button wire as shown in Figure 5 below. This wire provides power to the cold start ignition system and must be connected in such a way that it receives 12V DC *while the starter button is depressed only*. Accordingly, this lead must be connected to the starter solenoid: doubled with the starter button lead to share the same connection. On some

newer models, the starter warning light attaches to the opposite side: Check which your starter light power lead is before connecting.

f) Replace the Ram air duct. Tidy up loose wires and cables with zip ties and shrink wrap as required.

g) Re-connect the battery.

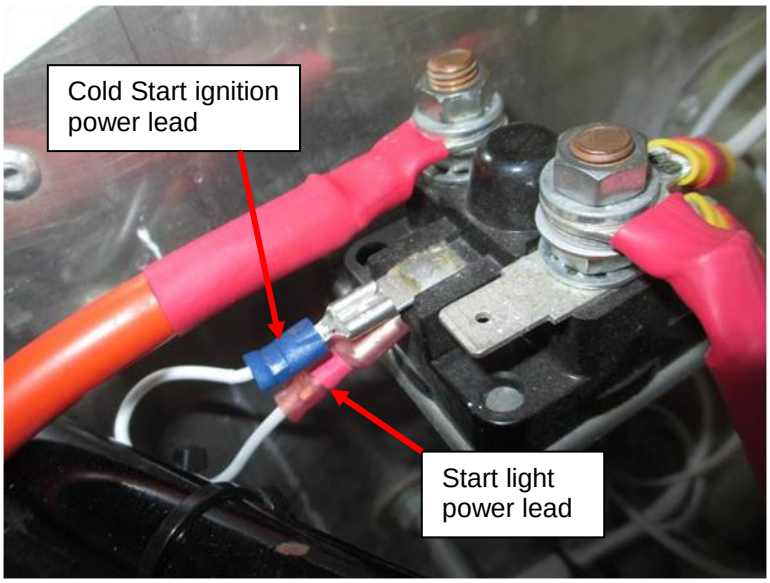

Figure 5 - Power lead wiring

1.7 Testing

a) Before fitting the cowls, carry out a test start: locate the aircraft in a position away from other aircraft and personnel.
b) Turn both standard ignition switches ON.
c) Start the engine. Run briefly, testing each ignition coil in turn.
d) Stop the engine.
e) Inspect the ignition and flywheel area for any signs of running or damage to the wires.
f) Re-fit the cowls and return the aircraft to service (including completing any appropriate maintenance records etc).

ITEM	PART No.	DESCRIPTION	QTY
1		ENGINE ASSY JABIRU 2200C REF	1
2	4A670B0D-1	IGNITION COIL W/ EXTRA WINDING	1
3	AN4-40A	BOLT	2
4	4A670C0D-1	MOUNT ASSY IGNITION CONTROL MODULE (COLD START)	1
5	PI4A014N	TACHO SENDER HALL EFFECT HAMLIN P/No. 55075-00-5-A	1
6	PI4A015N	7 PIN IGNITION MODULE (COLD START)	1
7	PI4A016N	7 PIN IGNITION PLUG (COLD START)	1
8	MS35206-248	SCREW	2
9	4A670D0D-1	WIRING LOOM ASSY (COLD START)	1

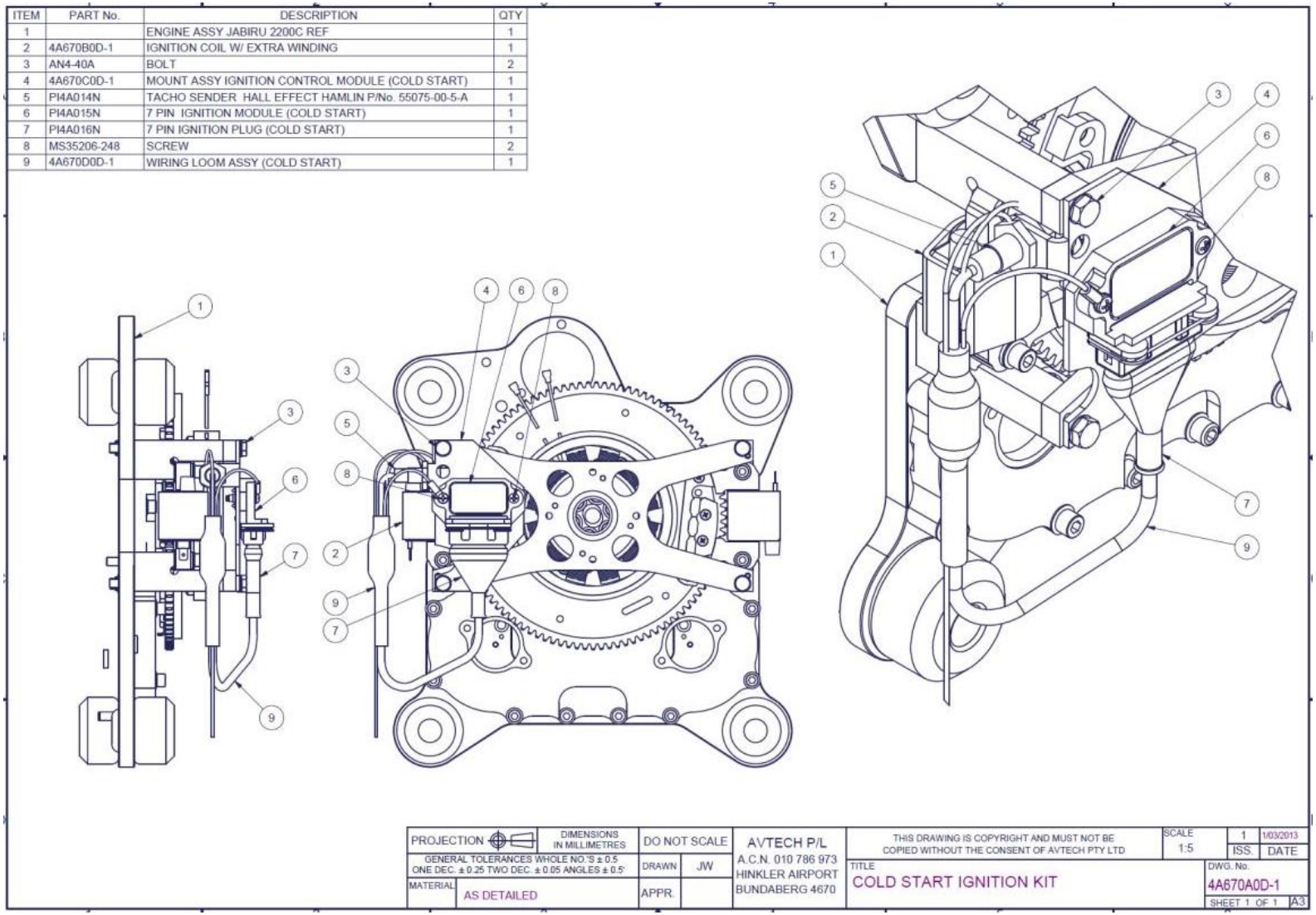

Figure 6 - Drawing - Cold start kit assembly and installation

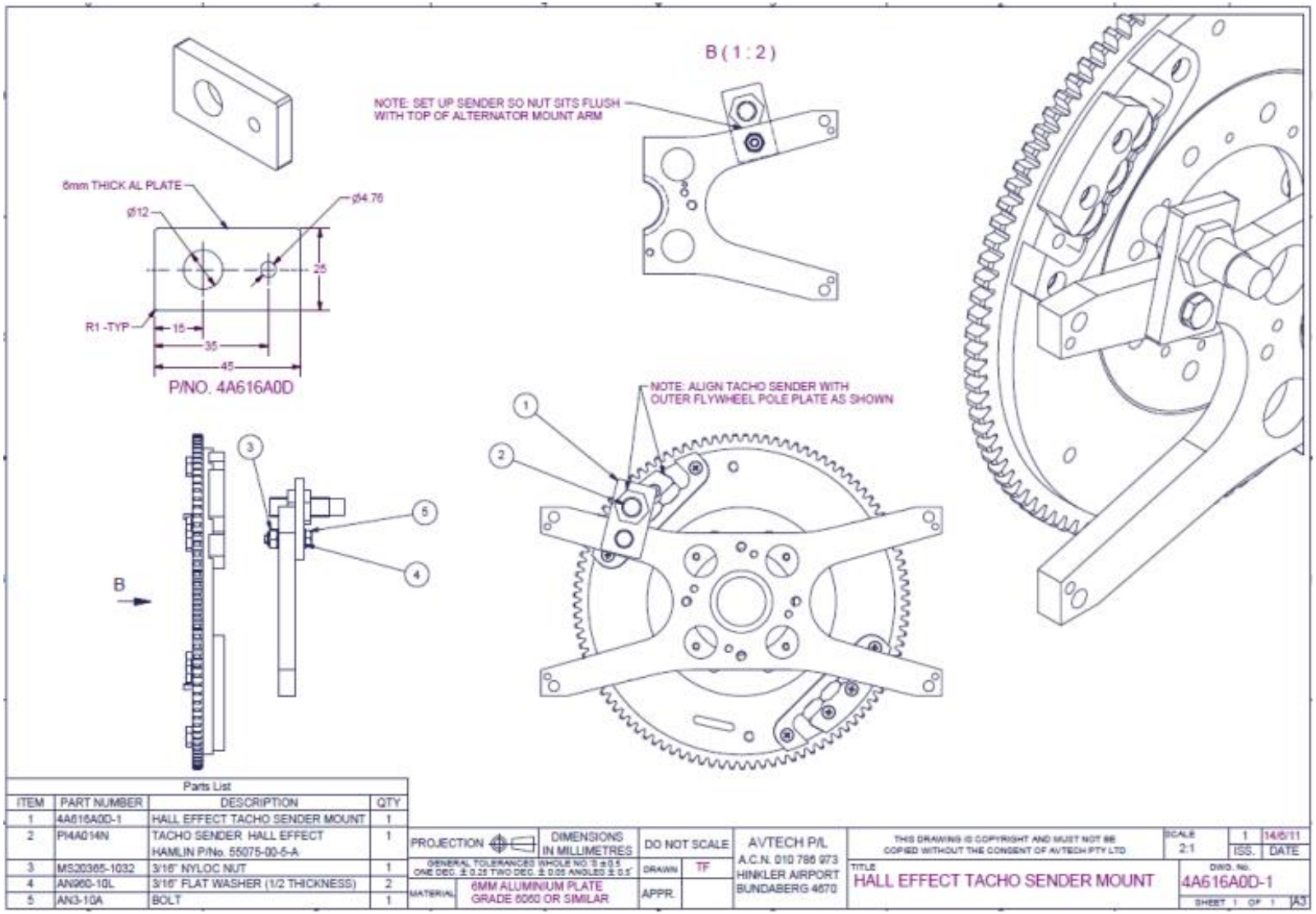

Figure 7 - Hall effect sender mount