

GoFly Aviation

SLING 2 Workbook



Airmanship:

*The safe and efficient handling of an aircraft
both in the air and on the ground*

Answering the questions at the back of this booklet is a compulsory part of your flight training. Your Sling workbook exam **MUST** be completed and ticked off on our copy of your flight record sheet, **PRIOR** to you going solo.

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IMPORTANT:

Please consult the Aircraft Pilot Operating Handbook (POH) or your flight instructor for more information if required, this document is to be used for reference purposes only.

1. Aircraft Pre-flight checks

Below is a basic list of areas to check during a pre-flight inspection. **IMPORTANT:** Please refer to the POH for a breakdown of each area which is required to perform a comprehensive inspection.

- **Cabin** – make sure the keys have not been left in the ignition and all switches are off. Take any items from the cockpit to use externally like the screw driver, dipstick, fuel tester and keys.
- Ensure your **seat** is in the correct position and locked and not items in the cockpit obstructing controls or rudder pedals
- Check **maintenance release** to ensure aircraft is legal to fly (see maintenance release section)
- **PITOT cover** - ensure pitot cover has been removed before pre flight
- **Nose Section and Nose Gear - IMPORTANT:** Always handle the propeller blade area with the palm of your hand i.e. do not grasp only the blade edge with your fingers. **ONLY** handle the prop with your Instructor present!
- **Right Wing and Main Gear – IMPORTANT:** Physically verify the fuel level before each flight
- **Left Wing - IMPORTANT:** Physically verify the fuel level before each flight
- Ensure enough **fuel** for your flight plus adequate reserves as per
- **Fuel** - Check fuel drain points with fuel tester for contamination
- **Engine Bay** - Check for oil leaks and other damage, check brake fluid, coolant and oil levels.
- **Airframe Check** - Check entire airframe in particular control surfaces, look for any damage, loose rivets or screws or corrosion
- **View** the aircraft from a few metres away at different angles

You should then return to the hangar to fill out the preflight whiteboard (see info below)

2. How to enter and exit the aircraft correctly**Entering:**

- **ONLY ONE** pilot/instructor or passenger can climb into the aircraft at one time!
- Place your right leg on the step and right hand on the handle and pull yourself up. **IMPORTANT:** Make sure you only step on the marked black areas of the inner wing
- Holding the side of the fuselage with your left hand, reach over and place your right hand on the metal T-bar between the seats
- While holding this bar, stand with both legs on the seat
- With your arm supporting your weight, place your legs either side of the control stick and lower yourself into the seat
- Put on your headset and fasten your seatbelt

Exiting:

- **ONLY ONE** pilot/instructor or passenger can climb into and out of the aircraft at a time!
- Remove your headset and seat belt
- Holding the side of the fuselage with one hand place your other hand on the metal T bar between the seats, and move to a squatting position on the seat. Carefully stand on the marked dark grip area of the inner wing. Moving rearwards with one hand on the handle, place one leg on the step and lower yourself slowly to the apron. **IMPORTANT: Make sure you only step on the marked black areas of the inner wing**

3. How to refuel the aircraft and add oil and coolant**Fuel:**

IMPORTANT: At the aircraft, please attach the **earthing cable** to the underside of the wing

- Please ask a GoFly staff member for assistance with Fuel, Oil and Coolant
- Make sure there is sufficient fuel in the fuel drum before wheeling it out to the apron
- Open the fuel cap on the aircraft and place the nozzle into the hole on the wing, being mindful not to spill any excess fuel.
- Turn the handle **clockwise** to fuel the aircraft. You may have to turn the handle rapidly for the first few turns to get it primed
- After refuelling, remember that the fuel will have to settle so please recheck the level again after a few minutes
- Perform a fuel **sample test** checking for water and/or foreign bodies

Oil and Coolant:

IMPORTANT: Please check with Instructor before filling OIL

- If the oil level is looking low please use the **red container** of oil called SHELL Aerosport, located in the locker in the hanger
- Take the funnel and a cloth for wiping any excess oil
- If the coolant level is low, then please see an Instructor for assistance

4. Positioning the aircraft correctly before start up

- Always pull the aircraft out onto the apron away from other aircraft, people and the hangar building
- While pulling the aircraft be careful not to accidentally clip any of the surrounding aircraft
- Make sure that you have a clear run-off area ahead of you should you need it
- Where practical, please position the aircraft into wind for starting

Park brake system differences:

Some Sling aircraft use Toe Brakes and others use a Handle Brake located next to the throttle. All of the Slings in our fleet have a Park Brake Lever which must be applied before Starting up and Shutting down the aircraft. **IMPORTANT:** When applying the parking brake lever, please ensure that you have adequate pressure on the handle or toe break to make certain it is sufficiently engaged. Failing to do

this could result in the aircraft moving when starting up. If you find that the parking brake is already engaged before engine start up, with safety in mind, please reset it again yourself.

5. How to read the maintenance release and make sure the flight is legal

One of the most important documents relating to an aircraft is the **maintenance release**. It provides a means for the pilot to assess, before the flight, whether all of the maintenance requirements relating to the aircraft have been complied with. Note that a flight may not commence if, during the proposed flight, any item of maintenance required by the maintenance release would fall due. The completion of the daily inspection must be certified before the first flight by a pilot other than a student pilot or other approved person.

When the daily inspection has been completed, the pilot in command - other than a student pilot - or other approved person must certify for the satisfactory completion of the inspection by signing Part 3 of the maintenance release {CAR 42ZC 4(d)}. CAR43B requires that **at the completion of each day's flying, the pilot in command or other approved person must record on the maintenance release the total flight time for that day**

The 3 Parts of the Maintenance Release are described below.

MAINTENANCE RELEASE PART 1:

Check that the current date is not later than the expiry date, and the current time-in-service does not exceed the expiry hours.

Check this maintenance release refers to your aircraft.

Engineer's Signature Required.

Check that the current date or time-in-service does not exceed the date or time-in-service at which any maintenance item is due, unless that item has been signed off by a qualified person.

The form is titled 'Maintenance Release Civil Aviation Regulation 43'. It contains the following handwritten information:

- Aircraft No: A 05428
- Aircraft Type: P68B
- Registration: JBM
- Engine Type: 4576-0
- Time: 17:00
- Date: 21 Jun '03
- Signature: B. Williams
- A.M.E. License/Authorisation No: W9339
- Category: CHAPTER 1
- Location: ARCHERFIELD
- Remarks: LOGBOOK STATEMENT & CASA SCHEDULES 1 & 2

Item No.	Maintenance required	Due at date Aircraft TIS	Completed with, entered & Certified in Log Book or Part 2 of MR	Date
1	Repara Oil	20/06/03	20/06/03	20/06/03
2	AD/P68/32	4/6/26/03	4/6/26/03	4/6/26/03
3	C/D 50H. INSP.	4/6/26/03	4/6/26/03	4/6/26/03

MAINTENANCE RELEASE PART 2:

If a defect is found, it must be entered as an endorsement on Part 2 of the maintenance release. The aircraft must not be flown unless the endorsement is signed off by a suitably qualified person {CAAP 43-1 (0) para 5.1}.

The aircraft should not be flown if an endorsement identifying a defect to equipment required for the flight has been entered here unless a clearing signature appears beside it.

Item No.	Endorsements	Signature and Date	Item No.	Clearing Endorsements	Clearing Signature, Licence No./Authority No. and Date
1	#2 ILS FUNCTION INOP	[Signature] 14/5/22			
2	RIGHT FUEL GAUGE UNDERREADS	[Signature] 22.6.02	2	FUEL GAUGE CORRECTED - RECALIBRATED	[Signature] 22/07/21
3	FUEL CONDENSING BETWEEN TANKS WHICH BEARS ON SUPPLY GAUGES	[Signature] 22.6.02	3	FUEL SELECTOR RE-ROUTED TO TEST NORMAL & 25/10/2021	[Signature] 14/5/22
4	EGT GAUGE UP	[Signature] 25.6.02	4	SELECTOR SWITCH CONTACTS CLEANED	[Signature] 22/07/21
5	HEADING BEE STRIKES ON LUBBER LINE & DOES NOT HOLD SET TRACK	[Signature] 22.6.02	5	N/A DEFECTED REF ALI MATV 14/5/22	[Signature] 22/07/21
6	LH BRAKE CALIPER HYDRAULIC LEAKS	[Signature] 17/10/21	6	Caliper removed; Disc and pad up. Rotor & brake system serviced	[Signature] 14/5/22 02/07/21

MAINTENANCE RELEASE PART 3:

DAILY INSPECTION CERTIFICATIONS AND AIRCRAFT TIME - IN - SERVICE							Part 3								
Date	Daily Inspection Certification		Aircraft Time in Service				Crew Items Log Landing/Flight Preparations	Signature	Daily Inspection Certification		Aircraft Time in Service		Crew Items Log Landing/Flight Preparations		
	(Pilot, LAME, MA)		This Flight		Progressive Total				(Pilot, LAME, MA)		This Flight			Progressive Total	
	Signature	Licence No.	Hrs	Min	Hrs	Min			Signature	Licence No.	Hrs	Min		Hrs	Min
	Brought Forward:		4576.0		50		L R		Brought Forward:		4452.4		176	L R	
2/16	[Signature]	140320	1.0		4577.0	50.0		[Signature]	540057	2.3		4454.7	15.3		
24/16	[Signature]	137265	1.3		4578.3	51.7		[Signature]	540057	2.7		4457.4	12.6		
25/16	[Signature]	142057	2.2		4580.6	54.4		[Signature]	540057	0.0		4457.4	12.6		
26/16	[Signature]	142431	2.1		4582.7	56.5									
27/16	[Signature]	142431	2.1		4584.8	58.6									
28/16	[Signature]	142431	2.0		4586.8	60.6									
29/16	[Signature]	142431	2.0		4588.8	62.6									
30/16	[Signature]	142431	2.0		4590.8	64.6									
31/16	[Signature]	142431	2.0		4592.8	66.6									
1/17	[Signature]	142431	2.0		4594.8	68.6									
2/17	[Signature]	142431	2.0		4596.8	70.6									
3/17	[Signature]	142431	2.0		4598.8	72.6									
4/17	[Signature]	142431	2.0		4600.8	74.6									
5/17	[Signature]	142431	2.0		4602.8	76.6									
6/17	[Signature]	142431	2.0		4604.8	78.6									
7/17	[Signature]	142431	2.0		4606.8	80.6									
8/17	[Signature]	142431	2.0		4608.8	82.6									
9/17	[Signature]	142431	2.0		4610.8	84.6									
10/17	[Signature]	142431	2.0		4612.8	86.6									
11/17	[Signature]	142431	2.0		4614.8	88.6									
12/17	[Signature]	142431	2.0		4616.8	90.6									
13/17	[Signature]	142431	2.0		4618.8	92.6									
14/17	[Signature]	142431	2.0		4620.8	94.6									
15/17	[Signature]	142431	2.0		4622.8	96.6									
16/17	[Signature]	142431	2.0		4624.8	98.6									
17/17	[Signature]	142431	2.0		4626.8	100.6									

The total flight time for each day's flying must be recorded here.

The progressive total for this maintenance release should be recorded here.

Maintenance time to run to the next 100 hourly inspection.

5. Weights for a Sling 2

Engine:	100hp Rotax injected (8668, 8515 and 8340)
Maximum take-off weight:	600kg
Empty Weight:	380kg
Useful load:	220kg

6. Airspeed settings at various stages of flight

Rotate:	60kts	Stall Speed with Flap:	45kts
Normal Takeoff climb:	70kts	Best Glide Speed:	70kts
Cruise Speed:	100kts	Final Approach Speed:	70kts
Stall Speed No Flap:	50kts		

7. RPM/Power settings at various stages of flight

Take-Off:	Max Throttle	Descent:	4,000rpm
Cruise Climb:	5,200rpm	Approach:	2,800rpm
Cruise:	5,000rpm	Downwind:	4,800rpm

8. Operating and 'Never Exceed' limitations for Sling 2

SPEED		KIAS	REMARKS
V_{NE}	Never exceed speed	135	Never exceed this speed in any operation.
V_{NO}	Maximum structural cruising speed	110	Never exceed this speed unless in smooth air, and then only with caution.
V_A	Maneuvering speed	91	Do not make full or abrupt control movements above this speed as this may cause stress in excess of limit load factor.
V_{FE}	Maximum flap extended speed	85	Never exceed this speed unless the flaps are fully retracted.
V_H	Maximum speed in level flight	116	The aircraft will not exceed this speed at MAUW in level flight, at maximum continuous power.
V_S	Stall speed (at MAUW)	46	At maximum all up weight in the most forward CG configuration, with flaps fully retracted, engine idling, the aircraft will stall if flown slower than this speed.
V_{S0}	Stall speed with flaps	42	With full flap, maximum all up weight, engine idling, the aircraft will stall if flown slower than this speed.

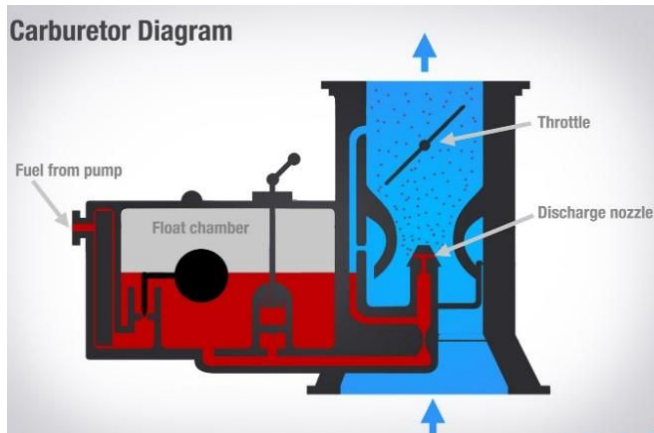
MARKING	KIAS	SIGNIFICANCE
White arc	42-85	Flap Operating Range (lower limit is V_{S0} at maximum weight, and upper limit is the maximum speed (V_{fe}) permissible with flaps deployed).
Green arc	46-110	Normal Operating Range (lower limit is V_S at maximum weight, most forward CG with flaps retracted, engine idling; upper limit is maximum structural speed V_{NO}).
Yellow arc	110-135	Manoeuvres must be conducted with caution and only in smooth air.
Red line	135	Maximum speed for all operations.

10. The differences between a carburettor and a fuel-injected engine

Carburettor Engine: The fuel/air mixture **meets in the carburettor** and then goes to each cylinder through the air intakes.

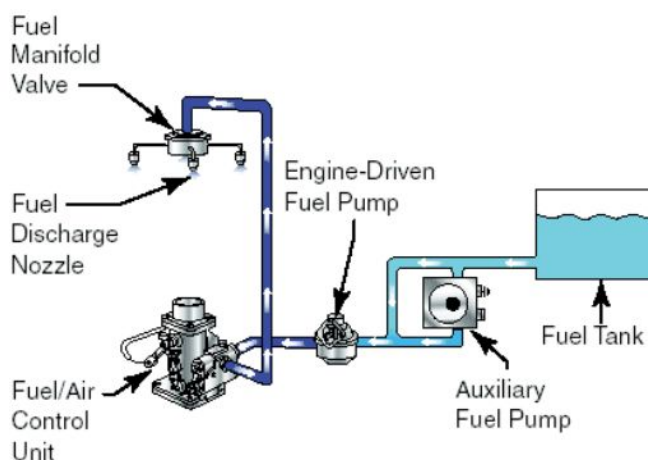
Fuel-Injected Engine: The fuel and air do not mix **until** they reach the cylinder.

PLEASE NOTE: The **backup electric fuel pump** on the carburettor engine should be **ON** for takeoff and landing and in the circuit area. It should be switched **OFF** once above 1000 feet.



IMPORTANT: Fuel-injection engines shoot fuel directly into the cylinders making them easier to flood (with too much fuel) when starting. Fuel-injection delivers a measured amount of fuel to the intake port on every cylinder. The benefit compared to a carburettor engine is fuel-efficiency and no carburettor ice.

PLEASE NOTE: The injected (iS) Sling model aircraft need to have the **fuel pumps ON** at all times otherwise the engine will STOP!



Emergency management actions for a Carburettor or fuel-injected Sling aircraft:

The procedures for both a carburetted and a fuel-injected Sling aircraft are similar regarding engine-related emergencies. A fully comprehensive list is provided in the Pilot's Operating Handbook (POH) for each individual aircraft.

There is however **one slightly different procedure** for an **Engine Fire in Flight** when flying a carburetted Sling aircraft:

IMPORTANT: Switch off Magnetos **after** the fuel in the carburettors is consumed and the engine has shut down. Estimated time to empty the carburettors after the fuel selector valve is closed is 30 seconds.

Again, please consult your POH for the aircraft that you are flying and/or discuss with an Instructor.

The main difference regarding the **induction system** are as follows:

- Our fuel-injected Slings (8340, 8668 and 8515) have two ignition switches, Lane A and Lane B
- Our carburetted Sling (7788) uses a key to select Magnetos Left, Right, Both and On/Off.

The main difference regarding the **Fuel pumps** are as follows:

- Our carburetted Sling (7788) has only one switch for the Fuel Pump. The fuel pump on the Carby engine is a back up electric pump and is selected to ON for take off and landing incase the main mechanic pump fails during this critical phase of flight. The back up electric pump can be turned off once top of climb. However once off and it can be used as a back up pump should the main mechanical pump fail.
- The fuel-injected Slings (Slings 8340, 8668 and 8515) have two switches for the Fuel Pump: one being the **Main Pump** and the other is the **Auxiliary Pump**. The fuel pumps on the Injected engines can *never be turned off* during normal operations as they supply fuel to the engine.

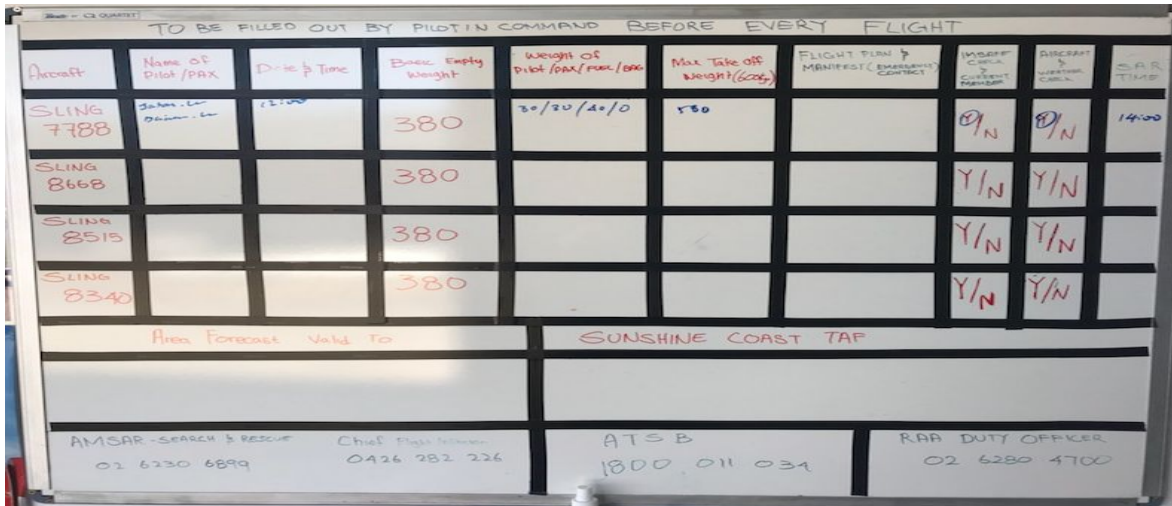
11. When to change fuel tanks and other Information

- The Sling aircraft have two (2) x 75 litre fuel tanks. Inside the cockpit there is a **fuel selector valve** with the positions left or right or off. The OFF is only to be used for emergencies.
- When **changing the fuel tank** in the air please make sure you change it during a non-critical **phase of flight, and**, if you are flying the carby-engine Sling 7788 have the fuel pump turned to **ON**.
- For a nav flight, it is good practice to **change the fuel tanks at least every hour**. For a standard one hour training flight, there should be sufficient fuel in each tank including reserves and the fuel tank should not have to be changed.
- Please note both left and right fuel tanks should be independently tested on the ground as part of your pre-takeoff checks.

12. How to fill out the pre-takeoff safety board

Please ask an Instructor to demonstrate completing the board. **IMPORTANT:** This must be completed before every flight by the student, with supervision by the Instructor, then once you have passed your flight test, this can be completed by the PIC (Pilot in Command) for that flight.

On the image below, you will notice that you need to complete 6 of the 10 sections



1. Name of Pilot/Passenger (PAX)	2. Date/Time	3. Weight of Pilot/Pax/Fuel/Bag
4. MTOW - Max takeoff weight (600kg)	5. Flight Plan inc emergency contact	6. SAR Time

Note 1: The **Max takeoff weight (MTOW)** is calculated by adding the 380kg (Empty Weight) to the total Weight of Pilot/Pax/Fuel/Bag. *e.g. 380 + 75/80/47/0 = 582kg MTOW*

Note 2: To convert **fuel in litres to kgs**, simply multiply the amount of litres by 0.72 (*e.g. 65 litres x 0.72 = 47 kgs of fuel*)

Weather - please consult the METAR and TAF information on the bottom of the board

Check the IMSAFE poster to the left of the board (Illness, Medication, Stress, Alcohol, Fatigue, Emotion or Eating) and tick the box on the whiteboard to say that you are safe to fly.

Kindly check that your RAA membership is current. If you're not sure, ask your instructor/receptionist to check the RAA's CFI portal in the office.

13. Electronic Flight Instrument System (EFIS) and what each item means

Ask an Instructor to demonstrate the EFIS display as each Sling may have slight differences.



14. How to use the Transponder

- **Sling 7788** – The transponder is located at the top left of the Garmin EFIS display. The VFR squawk code 1200 will be displayed automatically. If not, you simply tap on the transponder field and type '1200' then press 'enter'. You can also change the mode to ALT or GND within that menu. Use ALT for take-off and GND when back on the ground.
- **Sling 8340, 8668, 8515** – The transponder for these aircraft is located centrally near the switches and should also display 1200. If not, there is a knob on the right hand side for selecting the required code. The knob on the left allows you to select ALT or GND.
- If asked by Air Traffic Control to **change frequency**, turn the knob to 'standby' and change the frequency code to the one that Air traffic Control or Air Services requests. Then select 'ALT'. If they then ask you to 'squawk ident' (to notify them of your identity) you should hit the 'ident' button once. Please see your Instructor for more detail if required.
Transponder codes: 1200 is the standard VFR code in Australia. 7500 is the Hijacking code, 7600 is the radio failure code and 7700 is the Emergency code (in the event of engine failure)

15. Turning the propeller

In order to obtain a correct oil level reading as well as making sure that the oil is sufficiently lubricating the engine please do the following:

- Follow this process when the engine is cold or if the aircraft has not flown for a while. If the engine is still very warm then this action may be ignored.
- **IMPORTANT:** Make sure the key is removed and all of the switches are in OFF positions.
- Apply the park break.
- Remove the oil cap.
- Stand to the right side of the prop (starboard side), slightly to its rear with yourself facing forwards. With your LEFT arm stretched out, hold the prop with your left hand with your palm facing the aircraft. (ask your instructor to demonstrate)
- Pull the prop down towards the ground (clockwise) and take care not to stand too close whilst doing so.
- Continue this process until you hear a gurgle sound.
- **IMPORTANT:** Do not turn the propeller counterclockwise as it can damage the gears. The propeller should only be turned clockwise (from the view of sitting in the cockpit).
- Check the oil level is at least half way between the min/max marker.
- If you need to top up the oil, please remember to update this on the Maintenance Release. (ask your instructor)

16. Quiz

Either print this answer sheet at home or ask an instructor for one at the office. Kindly answer the questions below using the information provided in this booklet and then give to an instructor upon completion and ask them to mark it and add your score into your flight record sheet in our Flight Schedule Pro syllabus.

1. Where do you find the phone number of the RAA Duty Officer?
2. What is the phone number of the Chief Flying Instructor?
3. How do you convert fuel litres into kilos?
4. How is the MTOW calculated?
5. Name two ways of checking if your RAA membership is current?
 - (i)
 - (ii)
6. What does the acronym IMSAFE mean?
7. On a fuel-injected aircraft where does the fuel and air mix? (Circle the correct answer)
Carburettor / Cylinders
8. What is the main difference between a carburettor and a fuel-injected engine?
9. What happens if you turn the fuel pumps off in a fuel-injected engine while you are flying?
10. Which aircraft in the GoFly fleet have a carburettor engine and which are fuel-injected?
Write down the rego numbers for each: Carburettor: Fuel-injected:
11. Whose responsibility is it to complete the safety board and when should it be completed?

- 12. What is the correct power setting used whilst flying downwind?

- 13. Before starting the engine you find that the parking brake is already engaged. What action should you take, with safety in mind?

- 14. What VFR Squawk code should be displayed on the transponder?
- 15. On your transponder, when should you select ALT?
- 16. If you suffered an engine failure, and you had time to put in a code, what code should be selected on your transponder?

- 17. Why should you never turn the propeller counterclockwise?

Student name:

RAA Member No:

Instructor's Name:

Instructor's Signature:

Completion Date:

Questionnaire result:

Please give your answer sheet to your Instructor for marking and adding your score to your flight training record. You can refer to the Sling workbook online print your own copy of the workbook to refer to.